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MAINTENANCE MANUAL

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SERIES

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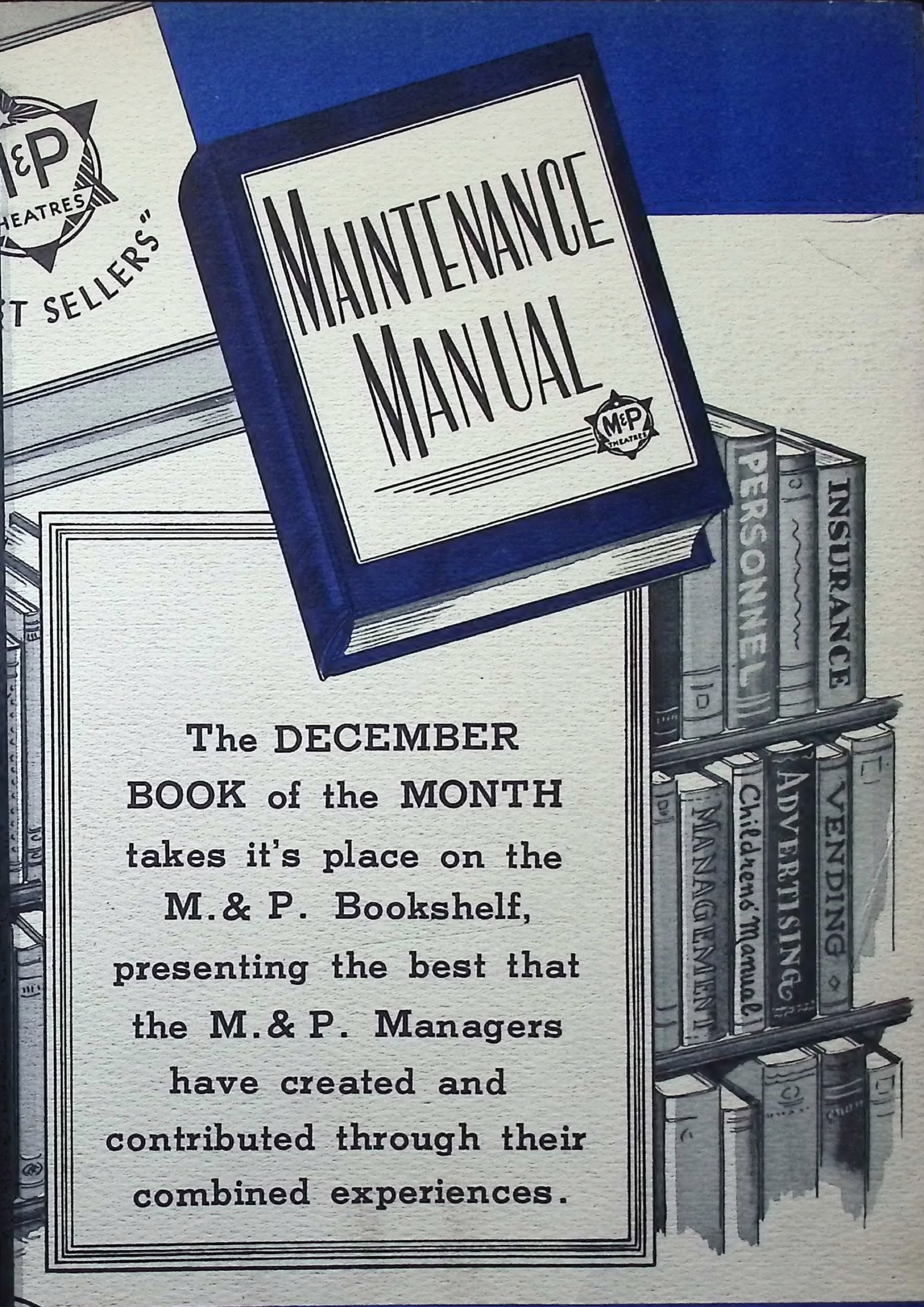
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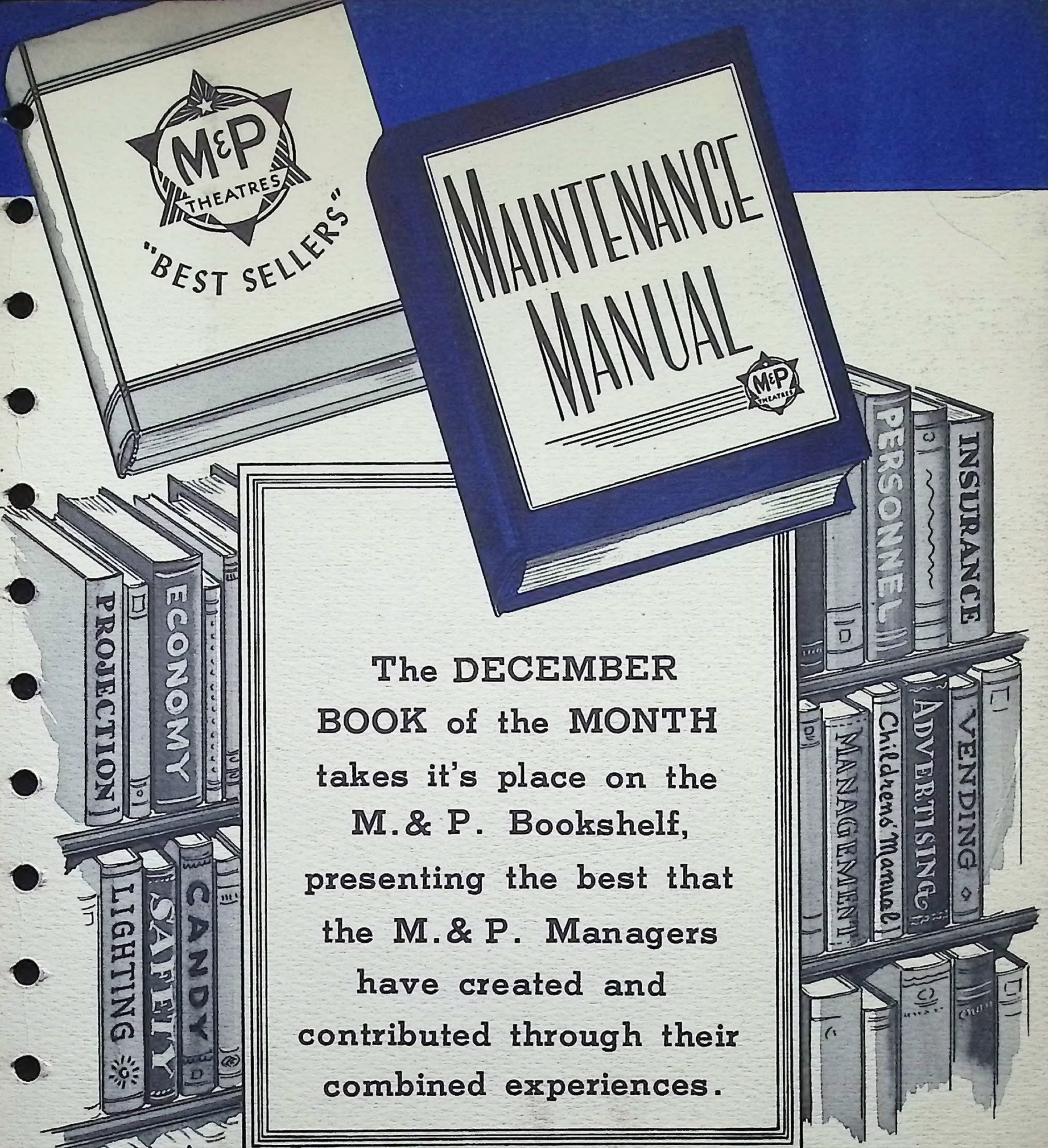
CARPETS RUBBER MATTING
CHAIRS — SEATS
ELECTRICITY
ERMINATORS
FIRE EXITS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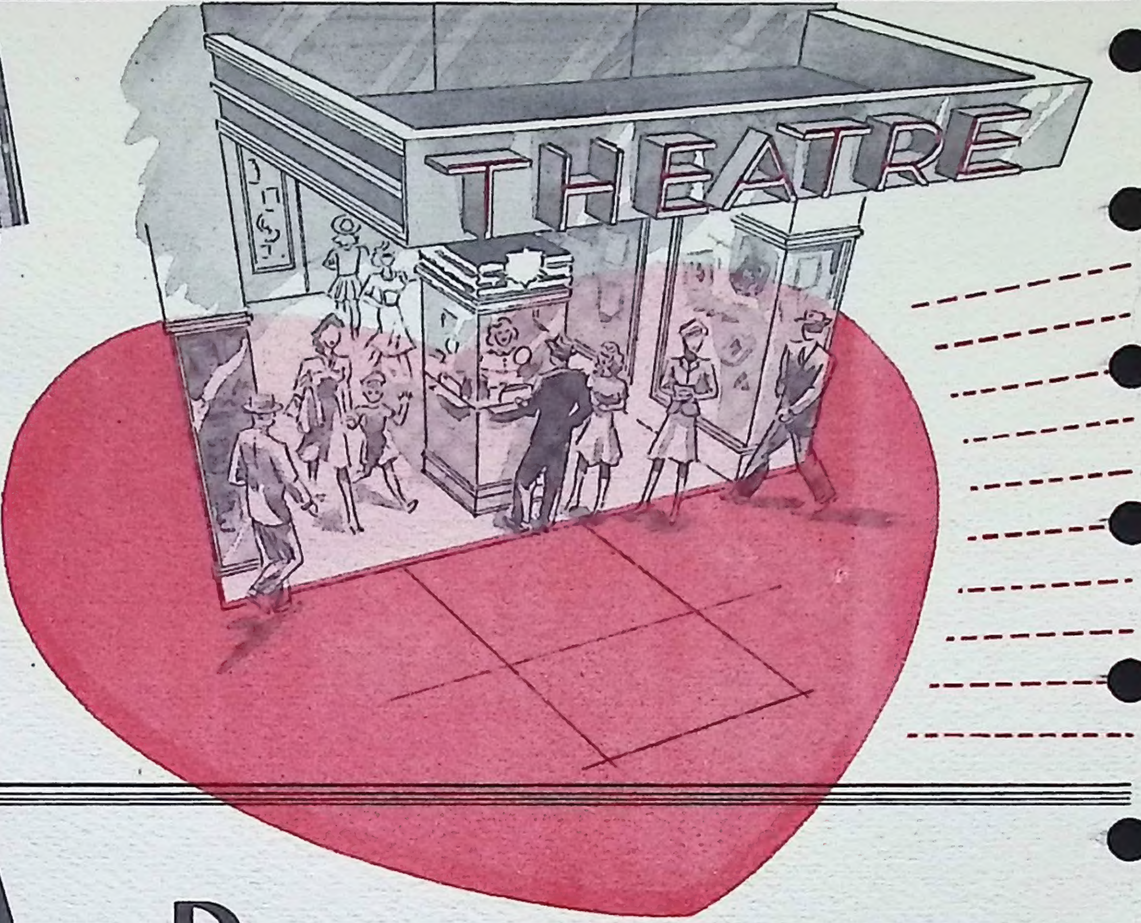

PREFACE

Maintenance is the HEART and NERVE CENTER of theatre operation and real estate upkeep.

In preparing this manual, the Committee has given consideration to maintenance data that can be readily understood by the layman. The technical portions of the manual will serve as a refresher course for the maintenance expert.

The Maintenance Manual, clearly indexed, is assembled in alphabetical form for ready reference.

The Maintenance Department should be contacted immediately on emergency matters involving trained experts.

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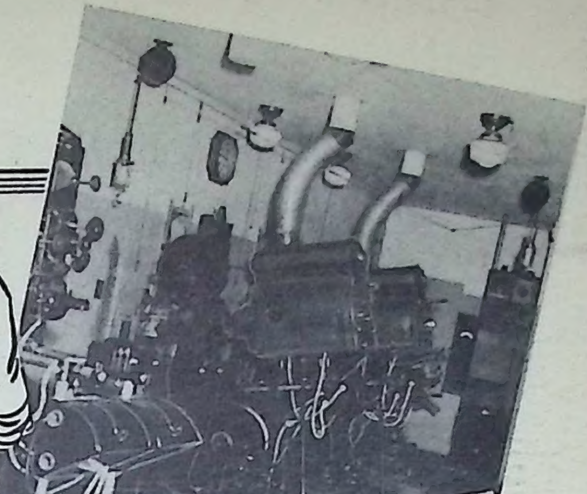
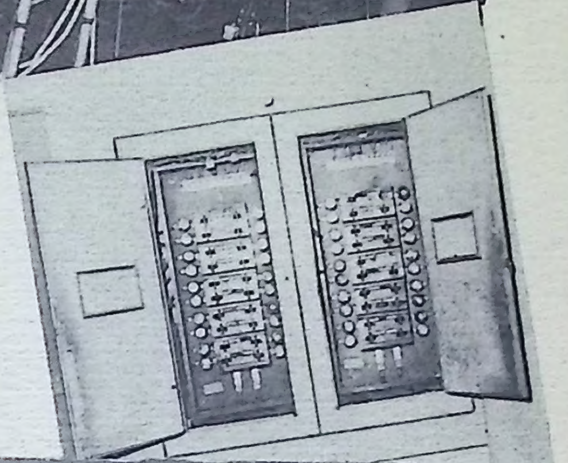
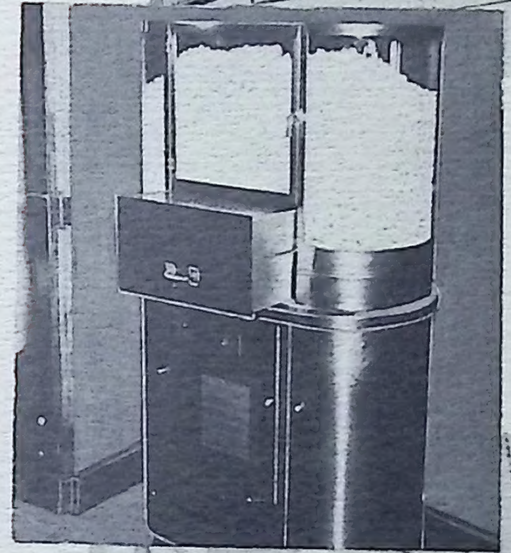
MANUAL





M&P THEATRES

AIR CONDITIONING - VENTILATION
BATTERIES - FLASHLIGHTS
BOILERS - HEATING
CHAIRS - SEAT MAINTENANCE
CARPETS - RUBBER MATTING
EXTERMINATORS - VERMIN - RODENTS



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FIRE EXTINGUISHERS
FANS - ALL TYPES
FUSES - ELECTRICITY
GENERATORS
HOUSEKEEPING MAINTENANCE
LAMPS - LIGHTING FIXTURES
MARQUEE AND LETTERS
MISCELLANEOUS

RROW
GLASS ALIBI
NOW PLAYING
One More Tomorrow

PROJECTION AND SOUND
PARKING SPACE
PICTURE SCREEN
POPCORN MACHINES & WARMERS
PLUMBING - WATER HEATERS
REQUISITIONS - FORMS

STAGE - EQUIPMENT
SPRINKLERS
TICKET MACHINES & CHOPPERS

Bert Brown

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MAINTENANCE MANUAL

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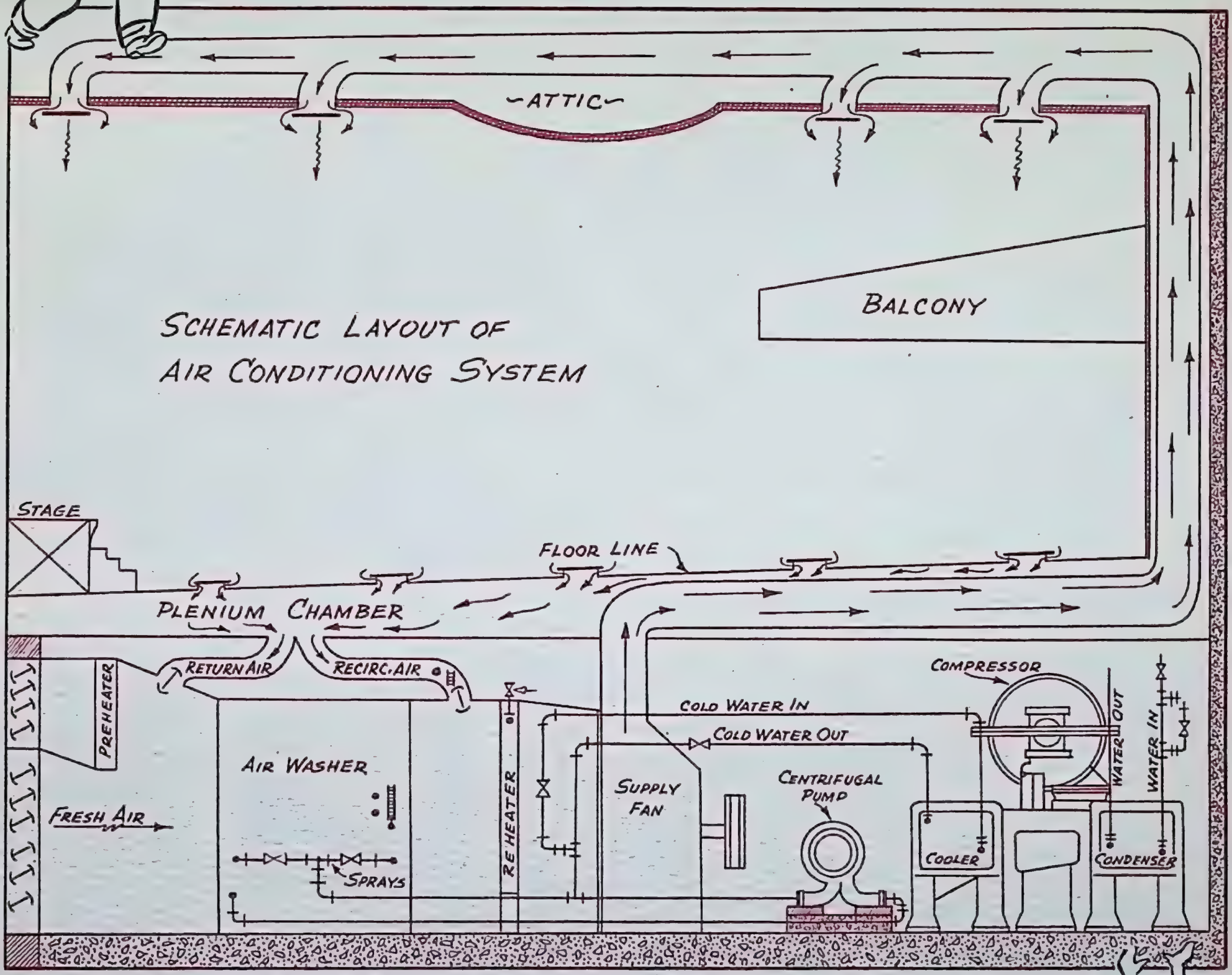
AIR CONDITIONING
VENTILATION

Maintenance Manual

Air Conditioning - Ventilation


ATTIC
BALCONY
STAGE
FLOOR LINE
PLENIUM CHAMBER
RETURN AIR
RECIRC. AIR
PREHEATER
FRESH AIR
AIR WASHER
SPRAYS
RE HEATER
SUPPLY FAN
COLD WATER IN
COLD WATER OUT
CENTRIFUGAL PUMP
COMPRESSOR
WATER OUT
WATER IN
COOLER
CONDENSER

SCHEMATIC LAYOUT OF
AIR CONDITIONING SYSTEM

THE SUCCESSFUL THEATRE MANAGER KNOWS THAT AN UNCOMFORTABLE PATRON IS A DISSATISFIED PATRON

Air Conditioning - Ventilation

AIR-CONDITIONING OF BUILDINGS CONCERNS MAINLY THE COMFORT OF PEOPLE. THE CONDITIONS CONDUCIVE TO COMFORT HAVE BEEN FOUND TO DEPEND ON THE FOLLOWING:-

TEMPERATURE, HUMIDITY, AIR MOTION AND AIR PURITY.

The following basic ideas pertaining to the care, upkeep, and running of the various phases of air conditioning and ventilation should produce a smoothly-functioning system, giving the best results for which the mechanisms were intended.

Air Infiltration

Large quantities of air leak into buildings from outdoors. Leakage occurs around windows and doors, and even through walls that are not tightly built. Since all the air brought in from outdoors must be conditioned, the leakage should be kept at a minimum.

Keep windows and doors tightly closed so that leakage of air from outdoors will be kept as small as possible.

Bearings

There are one or more bearings on all units which have fans, motors, compressors or other moving parts. Some types of bearings require oiling. Other types require grease to keep them lubricated.

Use only clean grit-free lubricant for bearings whether the lubricant is oil or grease.

Do not use an excessive amount of oil or grease, as too much is harmful and wasteful.

Use the type of lubricant recommended by the manufacturer. As a rule there is a plate on each part requiring lubrication that gives the recommended type of grease or oil to use. Instructions provided at the time the equipment was installed also include the information concerning proper lubrication.

Keep all bearings clean. Grit and foreign matter cause wear.

Use extra care when greasing ball-bearings to prevent dust or foreign particles entering. Such dirt may cause havoc.

When bearings show unusual wear or seem in any way to be faulty, call the maintenance department.

Change oil in bearings twice a year.

Coils

Whenever heat is added to or removed (1) from air, (2) from refrigerants in condensing units, (3) from engine jacket water, the equipment has a coil for this purpose. The coil may be identified by its appearance, as it looks like one or more rows of "pipe". In many cases the "pipe" will have a spiral fin wound around its outer surface. Around some coils, the fins are square plates, and the "pipe" is visible only by looking between the fins. All types of coils need attention to keep them efficient and make them last a long time.

Coils for Cooling Air

Coils for cooling air are usually of the plate fin or spiral fin type.

Keep coil and fin surfaces free from dust and lint so that air may pass over them readily, and the efficiency of the coils may be kept at a maximum. Excessively dirty coils require attention of the maintenance department.

Coils which cool the air condense moisture from the air so that, on hot humid days, moisture will be dripping from the coils. Be sure that the drain and drip pan collecting the moisture condensed out of the air are kept clean so as to allow adequate drainage for the condensate and to eliminate odors that may result from the drippings.

Keep coil surfaces free from dust and lint so that heat will be transferred to the air efficiently.

Coils-Air-Cooled

When cooling of refrigerant or other material is obtained by passing air over the coils, in which the refrigerant or other material to be cooled is circulated, the care of the coils is the same as given under Coils for Cooling Air.

Coils - Air and Water-Cooled

When cooling is done by air and water the material, which may be a refrigerant, engine jacket water, or other liquid, is circulated inside the "pipe." The outside of the "pipe" is sprayed with water. Air blown across the wet surfaces of the coils evaporates the water. The heat for vaporization is taken from the refrigerant or jacket water is to be cooled. This means of cooling is very efficient. It makes possible the transfer of large quantities of heat with the use of very little water, not much air and with low power consumption. To get these benefits, however, the coils must be kept in good condition.

Because water, when evaporated, may leave a deposit of solid matter in the form of scale, particular attention must be given spray water to prevent the accumulation of scale on coils.

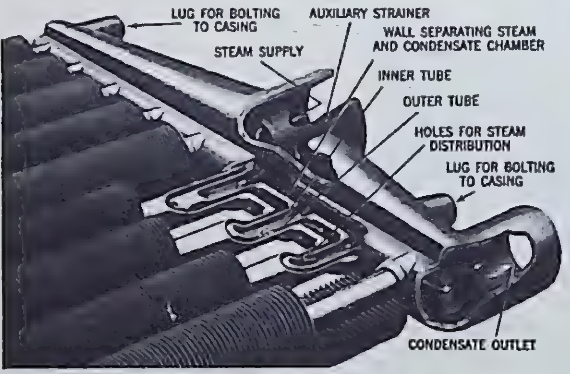
IF SCALE FORMS ON THE SURFACES IN LARGE AMOUNTS REPORT THIS TO THE MAINTENANCE DEPARTMENT.

Make sure that devices carrying off the waste water from the sprays are open and operating. Some water must flow constantly into the drain. This spillover prevents the accumulation of dissolved solids in the water.

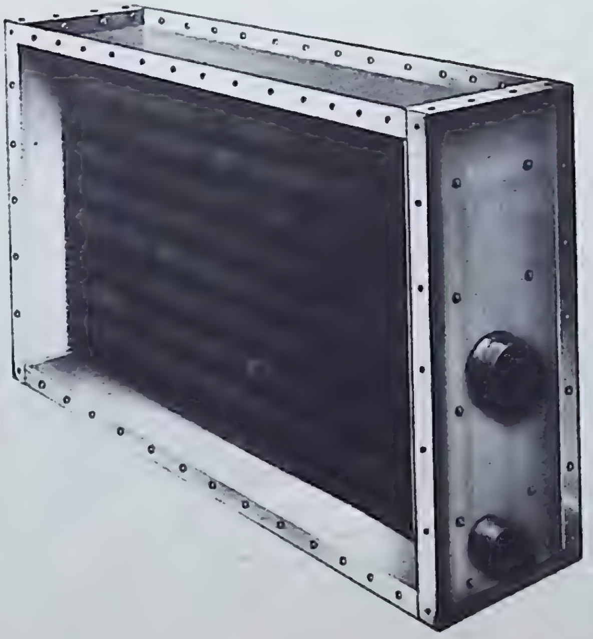
Coils - Water-Cooled

When water is used for cooling a refrigerant, the coils are not visible but are contained in a shell which has

AEROFIN NON-FREEZE COIL SHOWING STEAM AND DRIP CONNECTIONS ON SAME END


LUG FOR BOLTING TO CASING
AUXILIARY STRAINER
WALL SEPARATING STEAM AND CONDENSATE CHAMBER
STEAM SUPPLY
INNER TUBE
OUTER TUBE
HOLES FOR STEAM DISTRIBUTION
LUG FOR BOLTING TO CASING
CONDENSATE OUTLET

Cut-away section showing supply and return chambers, as well as inner tube with holes for steam distribution.



the appearance of a long cylindrical tank, mounted horizontally. There are usually four pipes connected to this tank. One set of pipes is the intake and the outlet for the cooling water flowing through the unit. The other set of pipes is for the intake and the outlet of the refrigerant or liquid to be cooled. If the refrigerant or liquid is not being cooled sufficiently, it may be due to the formation of scale inside the water coils. IF INADEQUATE COOLING IS INDICATED, REPORT THIS TO YOUR MAINTENANCE DEPARTMENT.

Compressors

THE COMPRESSOR IS THE HEART OF THE REFRIGERATING SYSTEM. IT PUMPS THE REFRIGERANT THROUGH THE SYSTEM SIMILAR TO THE WAY THE HEART PUMPS BLOOD THROUGH THE BODY. AIR CONDITIONING FOR COMFORT OR FOR LOW TEMPERATURE INSTALLATIONS USUALLY INCLUDES MECHANICAL REFRIGERATION THAT HAS A REFRIGERATING COMPRESSOR AND COMPLEMENTARY EQUIPMENT. THE COMPRESSOR SHOULD BE KEPT IN FIRST CLASS CONDITION SO THAT IT WILL DO ITS JOB OF COOLING WITHOUT WORKING OVERTIME.

IF THE COMPRESSOR DEVELOPS A KNOCKING NOISE, SHUT DOWN THE UNIT IMMEDIATELY BEFORE DAMAGE CAN OCCUR AND CALL THE MAINTENANCE DEPARTMENT.

Condensers

In one stage of the refrigerating cycle the refrigerant gas must be condensed, that is, the gas is changed into a liquid. In order to do this, heat must be removed from the gas, by means of air cooled, water cooled or evaporated condensers.

Condensers - Air Cooled

Keep coils in good condition by following instructions given under "Coils-Air Cooled". Keep fans in good condition by following the instructions given under "Fans". Keep motor in condition by following instructions given under "Motors".

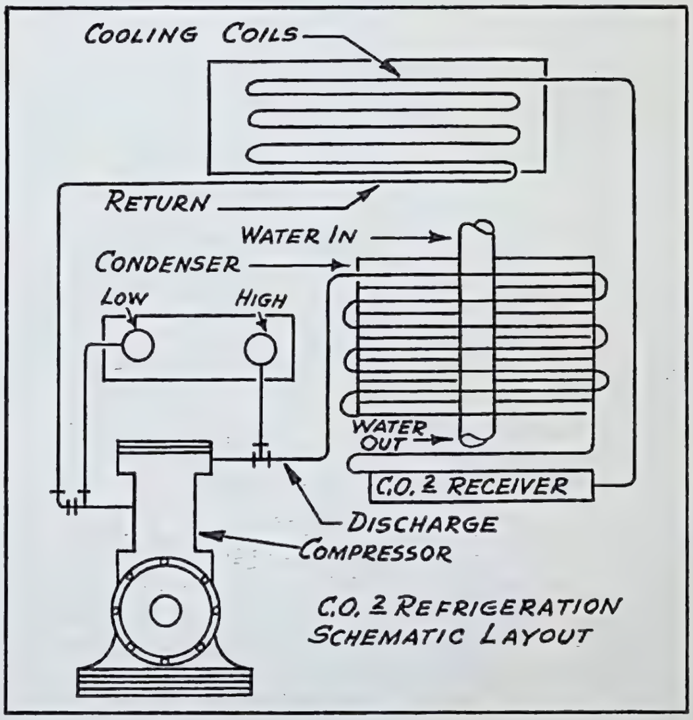
Condensers - Water-Cooled

Keep coil in good condition by following instructions given under "Coils - Water-Cooled".

Condensers - Evaporative

To identify the evaporative condenser check the name plate of the unit. There are several other means of identification. Evaporative condensers are often located outdoors. When located indoors, the air from the fan is discharged outdoors.

Evaporative condensers are a valuable part of a refrigerating system, affording great savings in power and water consumption. It is important to keep them functioning properly in order to effect savings.



Keep condensers in condition by following instructions given under "Coils-Air and Water-Cooled", "Fans", "Motors," and "Spray Nozzles."

Controls

Switches for starting and stopping the equipment and electric devices that control air conditioning and refrigerating machines have "electrical contacts" that may deteriorate. The electrical contact is the point where the circuit is opened or closed according to control demands. When electrical circuits are broken, a spark occurs, and this may cause pitting of the terminal. Excess sparking is an indication that the contact should be cleaned. Oftentimes the pitted surfaces and dust are not visible. Clean with care by using fine crocus-cloth. IF CONTROLS NEED FURTHER ADJUSTMENT, CALL YOUR MAINTENANCE DEPARTMENT.

Couplings

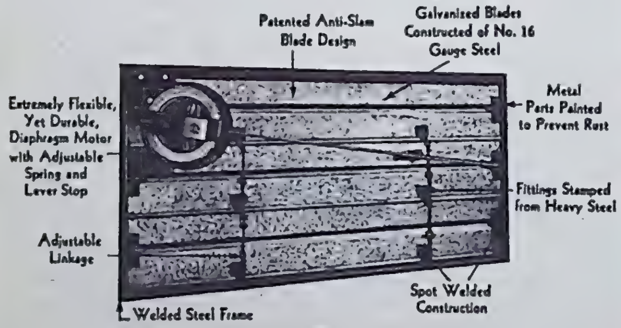
When fans, compressors or pumps are not belt driven nor the fans mounted on motor shaft, couplings are used to connect the motor drive to the rotating part. The coupling may be identified as the disc-like part located between the motor shaft and fan, compressor or pump shaft. These disc-like parts are bolted together so that the two shafts will operate as a unit. IF VIBRATION OCCURS, CALL MAINTENANCE DEPARTMENT.

Check line-up of couplings at least once a year, according to the Owner's Operating Instructions. WHERE A COUPLING SEEMS OUT OF LINE, THAT IS, THE SHAFTS DO NOT CONTINUE AS ONE PIECE, CONSULT YOUR MAINTENANCE DEPARTMENT FOR SERVICE.

Dampers

Dampers are used for regulating the amount of air brought in from outdoors, recirculated, or the amount of air that by-passes a portion of the air conditioning equipment. Dampers are automatically or manually controlled.

Louver Damper with All Metal Damper Motor


Patented Anti-Slam Blade Design
Galvanized Blades Constructed of No. 16 Gauge Steel
Extremely Flexible, Yet Durable, Diaphragm Motor with Adjustable Spring and Lever Stop
Metal Parts Painted to Prevent Rust
Fittings Stamped from Heavy Steel
Adjustable Linkage
Spot Welded Construction
Welded Steel Frame

The damper bearings and linkages which connect the damper levers to controls should be kept oiled so that they will move freely. Dampers should not be allowed to rust and should be painted often to prevent rust deterioration. DO NOT CHANGE SETTING OF ANY DAMPERS IN THE DUCT WORK.

Automatically operated dampers should be checked for easy operation.

Ducts

Ducts are the sheet metal air distributing system. Duct work is used when the air conditioning equipment is located remotely from the room being conditioned. Two precautions should be taken in servicing ducts. One is guarding against the ducts collecting dust and lint. The other is preventing ducts from opening at seams.

Ducts may shift slightly due to sagging walls and settling of foundation. Such movement may cause opening of joints which permit large quantities of conditioned air to escape before it reaches the room to be conditioned. Check ducts for open joints and tighten wherever possible.

Ducts should be cleaned out at intervals so that dust and lint will not accumulate and restrict air flow within the duct. ANY CLEANING OF DUCT WORK SHOULD BE DONE ONLY BY CONSULTING MAINTENANCE DEPARTMENT.

To prevent ducts from rusting, refer to "Metals" for care of the sheet metal.

Fans

Since one of the functions of air conditioning is circulation of air, fans are included in all air conditioning systems. Fans are also a part of air cooled and evaporative cooled condensers. Unit heaters have one or more fans to each unit. Fans may be one of two types:

1. The propeller type fans are similar to propellers on airplanes. The number of blades in the fan varies. A

typical propeller type fan is the one used for cooling radiator water in an automobile.

2. The other type of fan is known as the multiblade centrifugal type and is built along the lines of a water wheel on a ferry boat.

Fans, like all moving parts, require periodical attention to keep the maintenance low and to insure long life of the fan.

To care for fans, follow instructions given under "Bearings", "Belts", and "Metals".

With fans of the propeller type, clean blades when they are accessible without removing parts of the unit. Centrifugal types of fans do not have easily accessible blades and require a trained service engineer for cleaning.

Filters

Filters are easily identified by appearance. They consist of mesh -like metal glass wool or cloth contained in a framework. The air passes through the material and is cleaned by a filtering action. Filters in air conditioning equipment may be one of two types. In both instances, the appearance of the filters is much the same. One type of filter is a throw-away type, readily identified by the cardboard framing and its inexpensive construction. The other type consists of a metal frame and filtering material.

As the filters clean the air, they become dusty and tend to restrict the flow of conditioned air. To prevent excess restriction, the filters should be cleaned at regular intervals.

Check filters periodically to establish a cleaning frequency suitable to the location. Clean filters regularly by removing the accumulation of dust and dirt that hinders air flow.

Flywheels

In most air conditioning, refrigerating and heating systems, the pulley for running the equipment (not motor) pulley) is built to serve as a flywheel. Therefore, in most instances, check up on the flywheel.

KEEP FLYWHEEL RUNNING TRUE. A WOBBLY FLYWHEEL OR PULLEY CAUSES UNNECESSARY SHAFT AND BELT WEAR, AND EXCESSIVE VIBRATION. KEEP THE SET SCREW TIGHT SO THAT THE FLYWHEEL OR PULLEY IS HELD IN PLACE. IF THE WHEEL BECOMES WOBBLY, CALL YOUR MAINTENANCE DEPARTMENT.

Suggested Temperatures

In the operation of refrigerated air conditioning systems, too little thought is given to humidity and effective temperature.

The superiority of refrigerated systems over all other types is their ability to control humidity and, therefore, effective temperature. This point of superiority should not be overlooked.

IN MANY CASES, TOO, THESE SYSTEMS ARE OPERATED AT TOO LOW INSIDE TEMPERATURES. EXCESSIVELY LOW TEMPERATURES MAY ATTRACT THE ATTENTION OF THOSE ENTERING THE BUILDING BUT ARE UNCOMFORTABLE.

Below is a scale of acceptable inside conditions to be maintained according to various outside conditions.

Outside Dry Bulb	Inside Dry Bulb	Inside Wet Bulb	Relative Humidity
105	82	69	51.5%
100	81	68.5	52.5
95	80	68	53.5
92	79	67.5	55
89	78	68	56
86	77	66.5	57
83	76	66	58
80	75	65.5	59.5
77	74	65	61
74	73	64.5	62.5
72	72	64	64
72 & less	72	58	52

Air Conditioning Plant Shut Down

THE FOLLOWING STEPS SHOULD BE TAKEN WHEN YOU SHUT YOUR PLANT DOWN FOR THE WINTER SEASON:

Carrier System

a. Withdraw all refrigerant from the system and store it in drums with caps tightly screwed down on good lead washer gaskets, so that there can be no leak. Do not fill the drums entirely full.

b. A simple method of removing the refrigerant is by putting an air pressure of two or three pounds gauge on the system and forcing the liquid out into an open drum. THE EXHAUST FAN OF THE REFRIGERATING ROOM SHOULD BE RUNNING. Thus, the condition of the refrigerant, and the progress made in filling the drums, can be observed. Blank off vacuum gauges on cooler side, also rupture diaphragms.

c. The main charge is removed from the evaporator through the filler connection. This connection removes the entire cooler and pump charge.

d. The trap, condenser and return liquid line can be drained through the trap fitting connecting to the purge return, where styles "B" and "C" purges are used. Where this connection is not provided, drain this section through a 1/8" hole, provided for the occasion, if not already present, and carefully plugged later near the bottom of the trap.

e. Remove all water from the refrigerant. Its presence is easily detected by a muddy color, and it floats on top of the refrigerant appearing with the last of the refrigerant withdrawn. Pour the water from the surface of the refrigerant after a little settling. CHECK WITH MAINTENANCE DEPARTMENT BEFORE REUSING THIS LIQUID.

f. A full charge of oil should remain in the compressor throughout this period. Before beginning the next season's operation, the compressor should be run long enough to warm the oil slightly, stir it up and flush the oil channels. Then, drain all the old oil from the system with as much of the scale and grit as possible, and recharge with fresh oil.

g. Maintain a vacuum of 10" to 20" on the system throughout the idle period.

h. About once a week, run the machine long enough to lubricate the bearings, fill the seal reservoir and change the position of the motor so that no rust marks are allowed to grow on the bearing ends of the shaft or on the propellers.

i. The matter of turning the machinery over by the use of the motor can very easily entail a large expenditure in connection with electricity, unless this is watched very carefully. DO NOT RUN OVER A 10 MINUTE PERIOD.

j. If the room where the machine is located is damp, keep all polished or finished surfaces well greased. Keep the coupling well oiled.

k. Examine and repack the liquor pump stuffing boxes before starting a new season.

l. Be sure electrical starting equipment is clean and in satisfactory operating condition before starting up after a long shut-down.

m. The cooler and condenser tubes should be examined and cleaned thoroughly at least once every year, oftener where found desirable or where dirty water is used. In plants where fine dust or acid fumes are likely to get in the cooler water and cooler tubes, the tubes should be given additional attention.

n. ALL WATER SHOULD BE DRAINED FROM THE COOLER, CONDENSER, MOTOR COOLER, OIL COOLER, ETC. SPECIAL CARE SHOULD BE TAKEN TO DO THIS COMPLETELY, WHERE MACHINES ARE IN LOCATIONS EXPOSED TO OUTDOOR CONDITIONS OR IN UNHEATED ROOMS, TO PREVENT FREEZING.

o. A vacuum is to be maintained on the system during the shut-down period but all refrigerant is to be removed at the end of the operating season. The vacuum should be broken once a week when there is no refrigerant in the system, and pumped up immediately after to purge out any accumulated water vapor. Where a system style "d" purge is installed, the refrigerant should be removed from the purge chamber, and replaced by a light grade of oil, such as Gargoyle D.T.E. light oil. This is the oil that can be used to pump up a vacuum of about 15 inches.

OPERATION AND CARE OF CO_2 REFRIGERATION PLANTS

Experience has shown that the successful operation of a Brunswich-Kroeschell CO_2 refrigerating plant depends largely on the maintenance of four things:

A. Keep the plant fully charged with pure CO_2 gas.

B. Correctly set all expansion valves.

C. Correctly set rod packing.

D. Keep system gas tight.

In the machines in which carbonic acid is used, the cycle of operation is as follows:

First, a compression of the gas in a powerful pump, called a compressor, which raises its temperature; second, the hot gas then passes into coils of pipe over which cold water is allowed to run, thus carrying away the heat and liquefying the gas, then the latter passes through an expansion valve which allows it to expand in the refrigerating coils located in the air washer and take up the heat of the entering air that comes in contact with the water from the spray nozzles.

The gas now returns to the compressor and the cycle of refrigeration is complete. This cycle is repeated over and over during the hours of operation.

The quantity of condenser water to use depends on the cost of this water and its temperature. For average conditions use sufficient water through the condensers to give the "out" temperature SHOWN OPPOSITE the "in" temperatures as follows:

In 60° ----- Out 75°
In 65° ----- Out 77½°
In 70° ----- Out 80°
In 75° ----- Out 85°
In 80° ----- Out 87½°
In 85° ----- Out 90°

Winter Care of Plant

1. Throw out main line switch so that the compressor motor cannot be started-

2. Close the compressor suction and discharge stop valves tightly.

3. Loosen up the gland slightly that holds the piston rod stuffing box packing.

4. Pump oil by hand into stuffing box once a week. This is necessary to keep the stuffing box packing soft, so that it will not set tight on the piston rod.

5. Grease all of the finished machine parts; such as, crank shaft, exposed part of piston rod, stuffing box glands, etc., so that they will not become rusty. All piping that is not insulated should be painted. The outer condenser pipes should also be painted if they show signs of rust.

6. Release the tension of the bolts by loosening up the motor so that the bolts will hang loose. Flat leather bolts should be treated once every three months with Neats foot oil. This is done by taking a rag or piece of waste soaked with oil and rubbing it over the belt surface. "V" belts, which are made of rubber fabric, must not be oiled and should be left just as they are.

7. Keep the compressor and motor clean. It is recommended that the motor and compressor be covered with a canvas.

8. Pump the gas down in the cooling coils in the air washer so that the suction pressure gauge reads about 10 or 15 atmosphere, then close all of the CO_2 valves on the air washer tightly. The CO_2 valve on the outlet of the liquid received should also be closed tightly.

(A) To pump down the CO_2 coils in the air washer, the procedure is as follows: Close the valve at the liquid receiver on the liquid line which leads the liquid to the coils, then start the compressor and allow the compressor to run until the suction gauge reads about 15 atmosphere, at which time shut down the machine and close the expansion valves and the stop valves on all of the coils in the washer.

9. Go over and tighten all bolts and nuts on CO_2 piping from time to time to minimize the leakage of gas.

10. If the condensers are in a cold place where there is apt to be freezing temperature, the coil in the condensers must be drained. To make sure that no water can collect in the condensers, the bolts on the water return bonds on the top and bottom pipe of each section should be loosened so that if any water should collect in the condensers, this water will run out. If the condensers are located in a warm room where there will positively be no chance of freezing, the pipes should be drained and then refilled with fresh water and kept filled.

11. The condenser water pipes should also be examined at this time, and if they are dirty, they should be cleaned out by rodding them through with a wire brush.

VENTILATION

Outdoor Air Intake

Inspect the outdoor air intake thoroughly and remove all rubbish around intake, screen, weather louvres, dampers, base of intake shaft, intake riser and all rubbish, garbage, etc., in the vicinity of the air intake.

The air passing down the intake is used for breathing purposes and must be kept clean, and the entire intake connection from the outdoors to the fan room must be swept and kept absolutely clean.

Thoroughly inspect the intake damper to see that it can be easily moved and adjusted. The adjusting device should be inspected to make sure that the damper can be held in any desirable position from fully open to fully closed. DO NOT CHANGE SETTING OF DAMPERS INSIDE AIR DUCTS.

Air Washer

In order to obtain proper results and to have an odorless house, it is absolutely necessary that the water in the air washer tank be changed and replaced with clean fresh water at least once a week and more often if necessary. After the water has been drained from the tank, all mud and other dirt which has accumulated on the bottom of the tank should be removed and the tank thoroughly washed out.

In draining the air washer tank. carefully check the drain connection leading to the sewer to see that it is unobstructed and free from leaks.

In cleaning the air washer, the eliminators and all piping inside of the washer should be thoroughly washed down with clean water by the means of an ordinary garden hose which can be connected to the water supply pipe in the air washer.

Examine all spray nozzles and remove all dirt accumulated within the nozzle by removing the nozzle cap. A dirty nozzle discharges a stream of water, whereas a clean nozzle discharges a finely divided spray of water. Nozzles should be inspected once a day.

Examine the eliminators and other sheet metal portions of the air washer, in order to determine whether there is any corrosion of the surfaces. Corroded spots should be carefully scraped and cleaned, and covered with asphalt paint. If eliminators are beyond repair, this matter should be reported to the Maintenance Department.

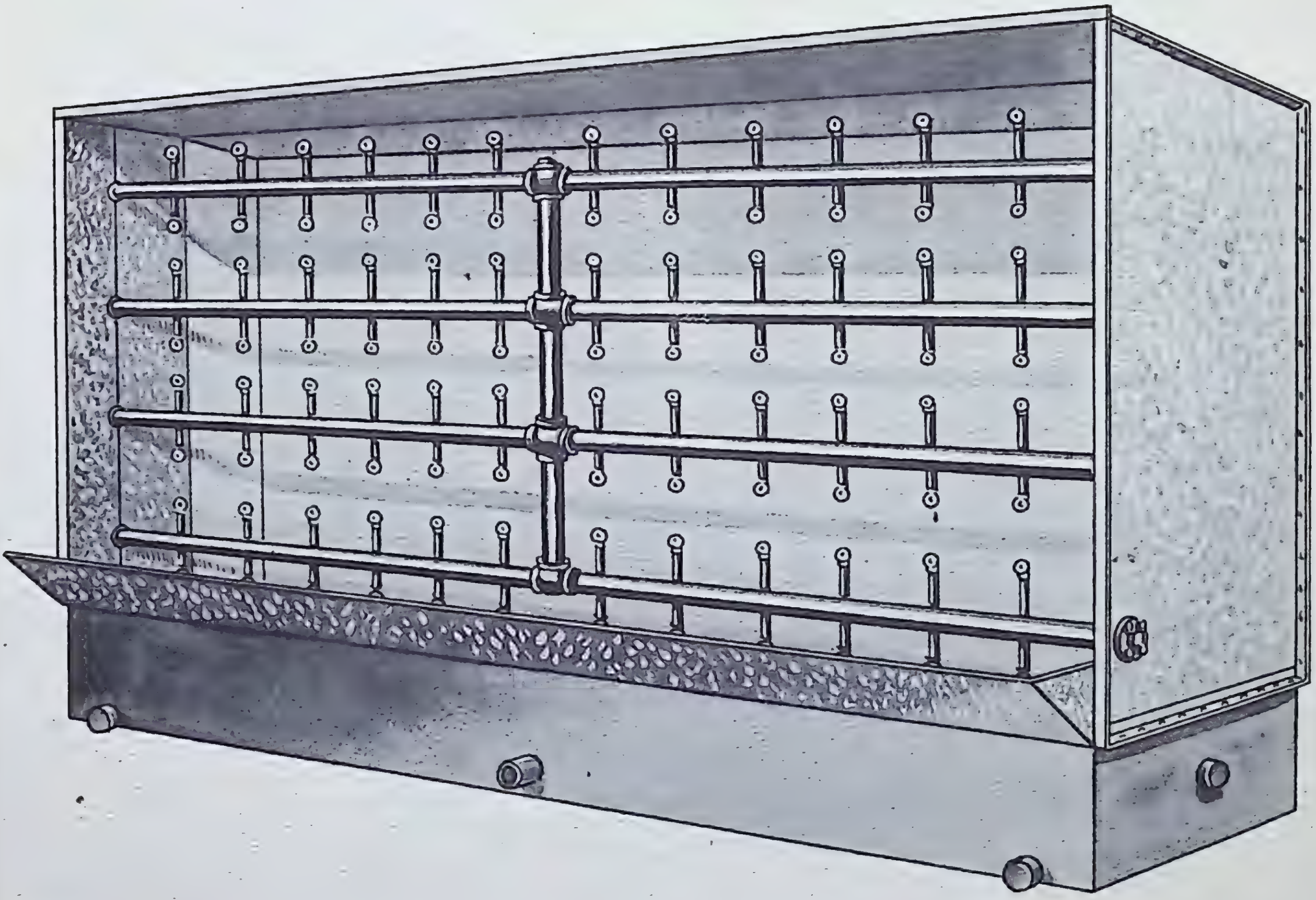
All floors and walls forming air chambers at the air washer should be thoroughly cleaned.

Inspect marine light inside air washer and replace lamp if necessary.

Inspect float valve and see that the water level in the tank is kept at the proper level with the overflow standpipe.

Carefully inspect the entire air washer for leaks which should immediately be remedied. Should there be any leaks around the inspection door of the air washer, probably due to the fact that the gasket is worn, this gasket should be replaced.

COMPLETE AIR WASHER SHOWING SPRAY NOZZLES AND BAFFLES.



Air Washer Pump

Inspect stuffing boxes on the pump and all piping connections between the pump and air washer tank so as to eliminate all leaks. It is much better to replace the old packing with new packing because dry, hard packing will cause serious wear on the shaft.

KEEP MOTOR AND PUMP BEARINGS PROPERLY OILED AND RENEW THIS OIL ONCE A MONTH.

Check alignment of pump and motor. A properly aligned pump will operate free from noise and vibration. See that bolts attaching pump and motor to base are properly pulled down.

See that drip pipe which is attached to the pump base is free from obstruction.

Inspect piping connections and flanges on pump and washer tank to see that bolts are properly tightened and all connections are free from water leaks.

Inspect pressure gauges on pump discharge lines to see that they are free from defects. See that the pump and all piping from pump to air washer are painted at least once each year. This can be readily done by the engineer or the handy man in the theatre.

Fans and Motors

Inspect all bearings and oil reservoirs on fans and motors to see that oil level is properly maintained and change oil once a month. Inspect ring oilers inside of bearings to see that shaft is properly lubricated and that bearings do not heat up. See that bearings are properly bolted down to bearing supports.

See that the canvas connection between the discharge side of fan and the supply duct and also the canvas connection between the intake side of fan and the duct work is in good condition and is properly held in place.

SEE THAT MOTOR STARTING DEVICES ARE IN PROPER CONDITION AND AVOID STORING MATERIAL ON TOP OF STARTING CABINETS.

Inspect fan belts and tighten same if slippage is excessive, by moving back the motor on its sliding base. Avoid an unnecessarily tight belt to prevent excessive wear. Use belt dressing sparingly to prevent slippage of belt. If these items need attention, it is important that you immediately notify your Maintenance Department.

Commutators and brushes should be kept clean at all times to prevent sparking. Inspect and renew brushes and brush springs and replace if necessary.

Examine motor frames, bases and floors around fans and motors to see that these are kept free from oil which may be splashed from bearings.

Gauges

Various gauges are put on air conditioning and refrigerating equipment to show how the equipment is operating. Gauges in air conditioning and refrigerating equipment serve the same purpose as gauges on the dash board of an automobile. They are of value only when recording correctly. Mark on the gauges the place the indicating needle should be when equipment is operating correctly according to instructions supplied at time of installation. WHEN GAUGES ARE NOT OPERATING PROPERLY, CALL YOUR MAINTENANCE DEPARTMENT.

Leaks

Leaks in air conditioning, refrigerting and heating equipment, as in everything else, mean waste. Prevent leaks by proper care. Repair promptly.

A typical example may be found in the case of a leaky faucet. That leaky faucet, which can be easily repaired at a cost of a few cents by installing a new washer, may not appear to be a vital factor, but a ¼" opening running for one month will waste 307,000 gallons of water. Cost of this water approximately $60.00.

a 1/16" opening running for one month will waste 19,200 gallons of water. Cost of this water approximately $30.94.

Thus you can see how important a small leak can be.

This same table may be applied to steam leaks. The only difference is that the steam leaks cost you two and one half times as much.

Metals

A large amount of metal parts are used in air conditioning, refrigerating and heating equipment, hence the PROTECTION OF METALS is an important factor in the care of this equipment. If metals show signs of rust spots, act promptly, since rust is an indication of deterioration.

Clean all rust spots with wire brush or steel wool. To prevent further rusting apply a rust arrestive and then paint metal surfaces with water resistant paint.

Casings of air conditioning equipment are made of metal and should be cleaned inside and out at least once a year and more often if necessary.

Refer to "Ducts" for care of the sheet metal used in air circulating system.

Motors

To start and stop motors follow operating instructions supplied at the time installation of the equipment was made.

Refer to Electrical - Motors.

Screen for Air Intakes

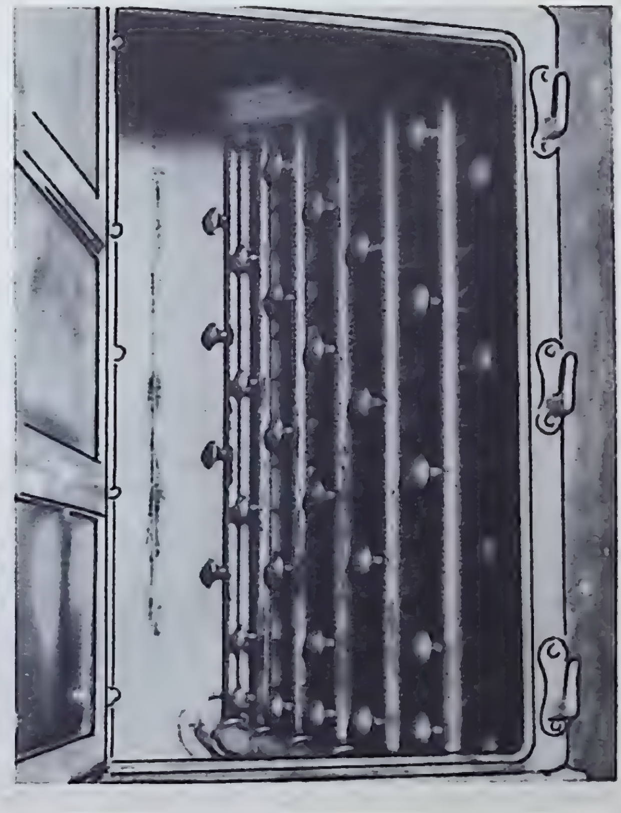
The interior of air conditioning units evaporative condensers and similar equipment, is protected by screens over the air intakes. These protective screens should be free from papers and other refuse so that air can enter the intakes without interference.

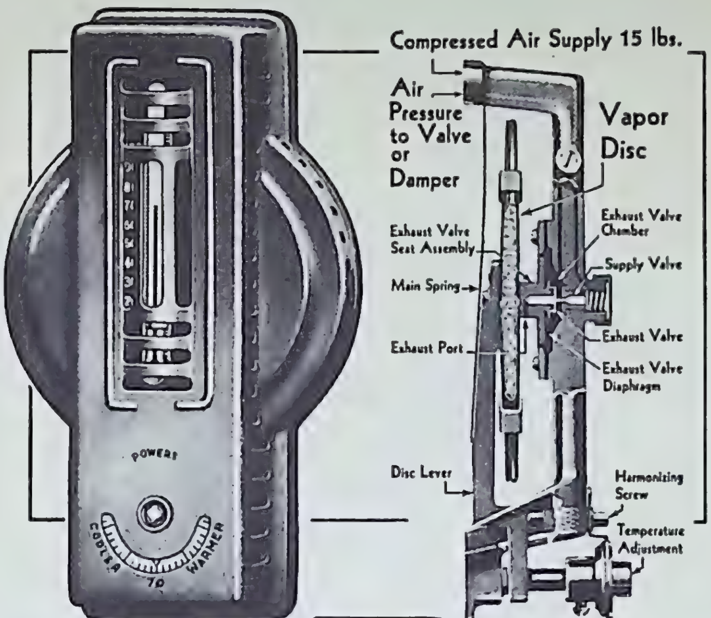
For the same reason, do not block the air intakes with furniture, boxes, etc. To block the intake is like blocking the front of a car radiator. It cuts down the air intake and should be avoided.

Spray Nozzles

Spray nozzles are used in humidifiers, dehumidifiers and evaporative condensers. For efficient operation the spray nozzles must be serviced at regular intervals.

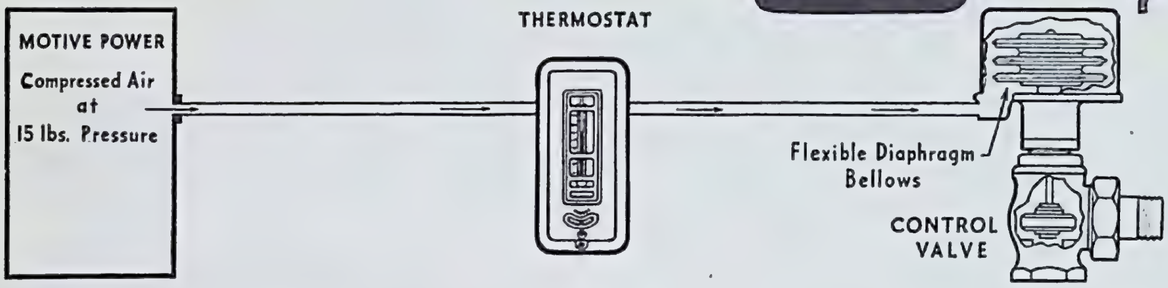
Clean each spray nozzle so that spray is uniform throughout for maximum efficiency. Keep water clean so that dirt is not present to cause wear in nozzles. Inspect nozzles daily to check for cleaning frequency and set up a cleaning schedule to suit the locality. A nozzle needs cleaning when its flow of water is irregular or depleted.




Compressed Air Supply 15 lbs.
Air Pressure to Valve or Damper
Vapor Disc
Exhaust Valve Chamber
Exhaust Valve Seat Assembly
Supply Valve
Main Spring
Exhaust Valve
Exhaust Port
Exhaust Valve Diaphragm
Disc Lever
Harmonizing Screw
Temperature Adjustment
POWERS
COOLER
70
WARMER

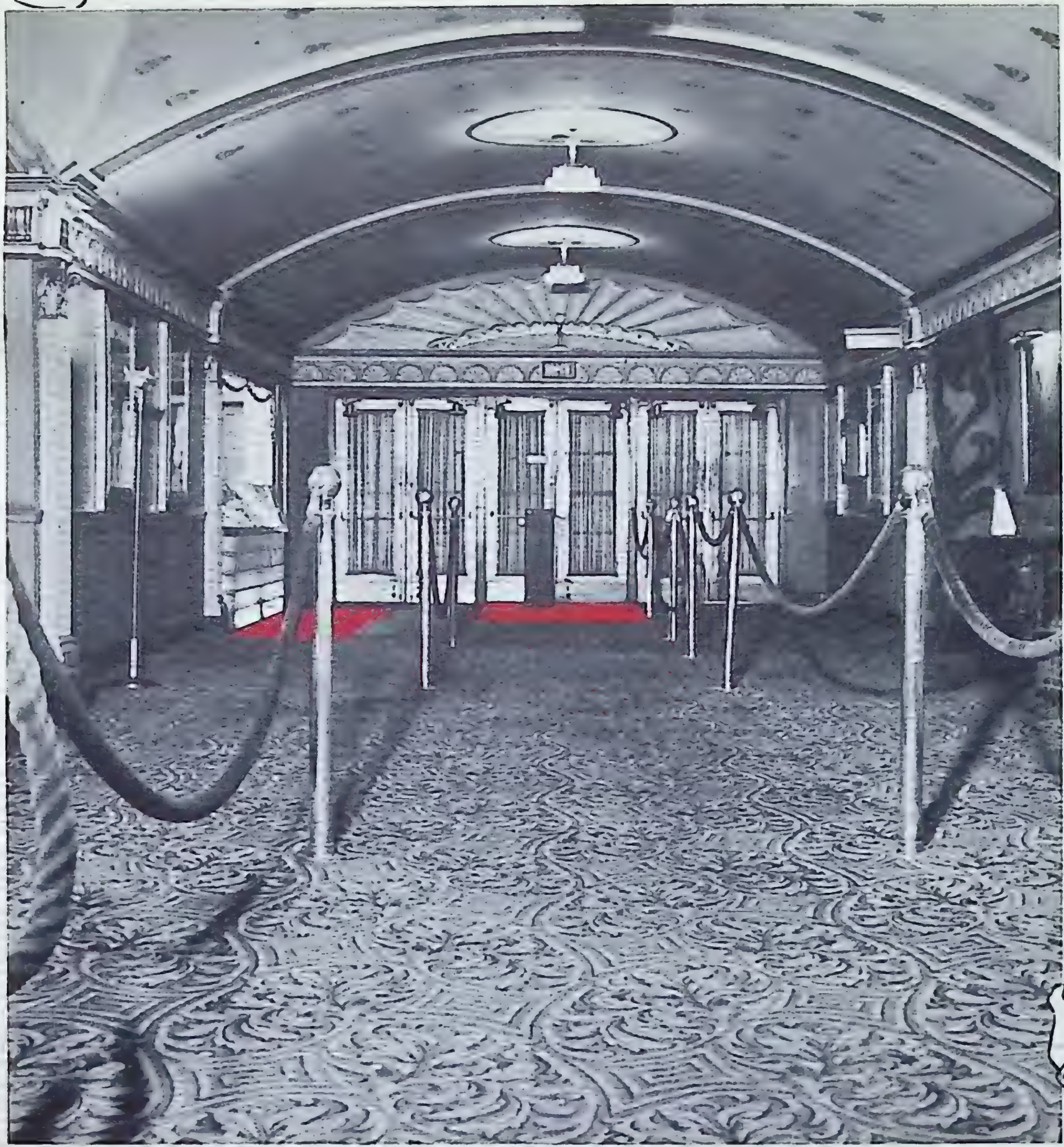
Thermostats

The thermostat is a device which either accelerates or retards the flow of compressed air to the air dampers. This air is supplied through an air compressor which requires constant attention. ANY CHANGE IN THERMOSTATIC CONTROL SHOULD BE MADE BY THE MAINTENANCE DEPARTMENT.


MOTIVE POWER
Compressed Air at 15 lbs. Pressure
THERMOSTAT
Flexible Diaphragm Bellows
CONTROL VALVE

CARPETS
RUBBER MATTING

Carpets - Rubber Matting



GENERAL SCENE OF A TYPICAL CARPETED LOBBY SHOWING INLAID RUBBER MATTING IN FRONT OF DOORS AND TICKET CHOPPER. USE OF THE RUBBER WILL PREVENT CONSIDERABLE WEAR OF THE CARPET.

Carpets - Rubber Matting

CARPETS & RUBBER MATTING MAINTENANCE

A. A Great deal of wear, tear, and abuse is given to carpets, especially at entrances, main aisles, around candy counters, drinking fountains, etc. In treating this very important subject, managers should give a lot of consideration to their carpet maintenance problems.

RE-LOCATING TICKET CHOPPERS

B. Where practical, you can prevent the constant wear of carpet in one particular spot by using a different entrance door for ticket machine which would automatically save or minimize wear and tear of carpet.

RUBBER RUNNER

C. It has been found practical to use a rubber runner at entrances or in lobbies, especially on rainy or snowy days. By this practice, considerable saving of carpets will result and many accidents will be prevented.

MATTING IN FRONT OF CANDY STANDS

D. Usually this spot is a problem, as carpets here show extreme wear. Therefore, we have found it feasible to remove carpet and install TILING, or RUBBER MATTING, of the type suitable to and consistent with colors of carpets. This procedure has proved practical as a carpet saver.

DRINKING FOUNTAINS AND DISPENSING MACHINES

E. In above spots we also recommend removal of carpet and the installation of TILING. Carpets that are continually soaked with water or syrups will create an unhealthy condition, as well as possibilities of bad odors.

PROPER CARE OF CARPETS

A. A good vacuum cleaner should be used daily. This should thoroughly remove gritty substances, which is important, as grit not removed will injure the carpet. It has been found that proper vacuuming and grit removed will extend the wear of the carpet from 15% to 25%.

CARPET LINING

A. It is a usual procedure to lay carpet over pads made for this purpose. A good lining adds to the resilience, also reduces the wear of the carpet, representing a substantial saving. We purposely call this to your attention, as there have been instances of carpet being laid without lining.

CARPET STAIN REMOVALS

(A) Chewing Gum, (B) Sticky Candy, (C) Fruit Stains, (D) Ice-cream stains can be easily removed by the use of a clean cloth with hot water. Rub vigorously-let it dry - then sponge with carbon tetrachloride. DO NOT USE GASOLINE FOR CLEANING CARPETS.

CARPET SHAMPOOING

A. In recent years LOCATION CLEANING OF THEATRE CARPETS has made considerable progress. With new machinery and new methods, shampooing of carpets has helped considerably towards improving the appearance of carpets as well as the wear.

B. Theatres that have a problem with dirty looking carpets should requisition the maintenance department as they are well acquainted with the BEST METHODS. Please remember, expensive carpets CAN BE DAMAGED OR RUINED by inexperienced concerns which may not use proper solutions.

FAULTY CARPET INSTALLATION

A. Always keep in mind that improper laying of carpet will create an accident hazard, plus unnecessary wear. Lumps in carpet lining or bulges in carpets caused by improper stretching will greatly reduce the life of the carpet.

STAIR CARPET

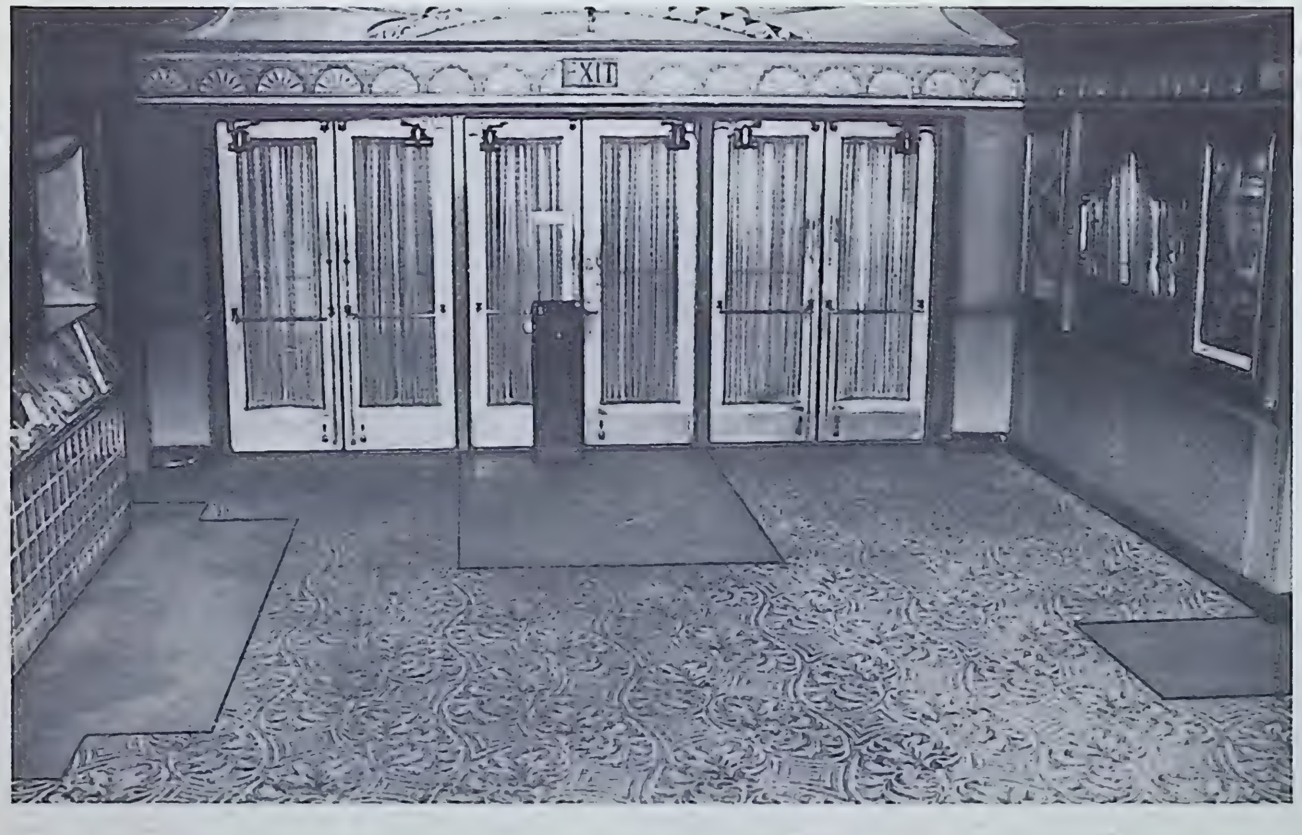
A. For appearance sake as well as safety, careful check should be made of carpet runners on stairways. When they show wear, the maintenance department should be requisitioned for a face lifting job on the stairs. By such methods, the worn parts of carpets will be removed from stair to a point higher up against the back of the stairs.

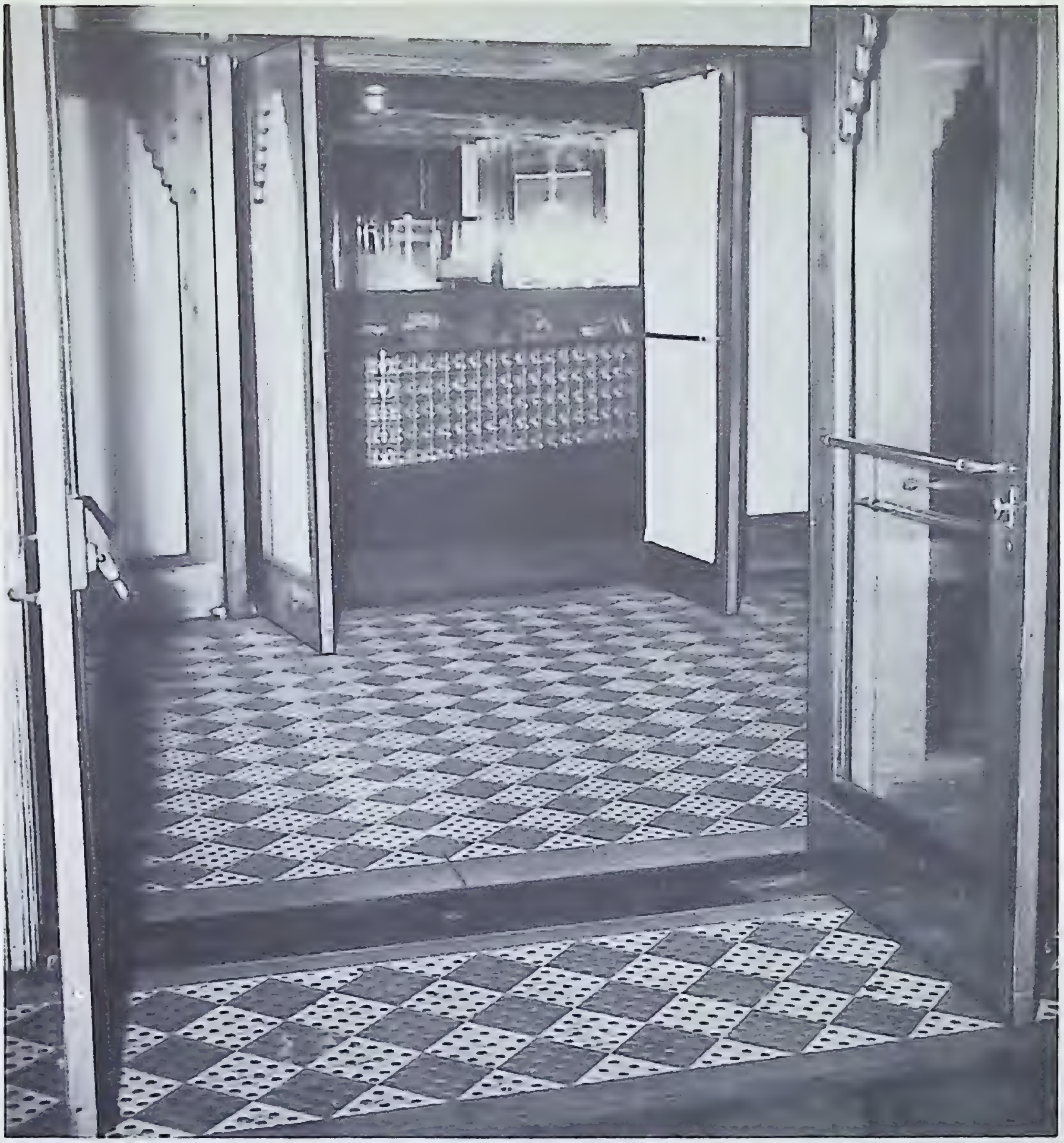
RUBBER MATTING

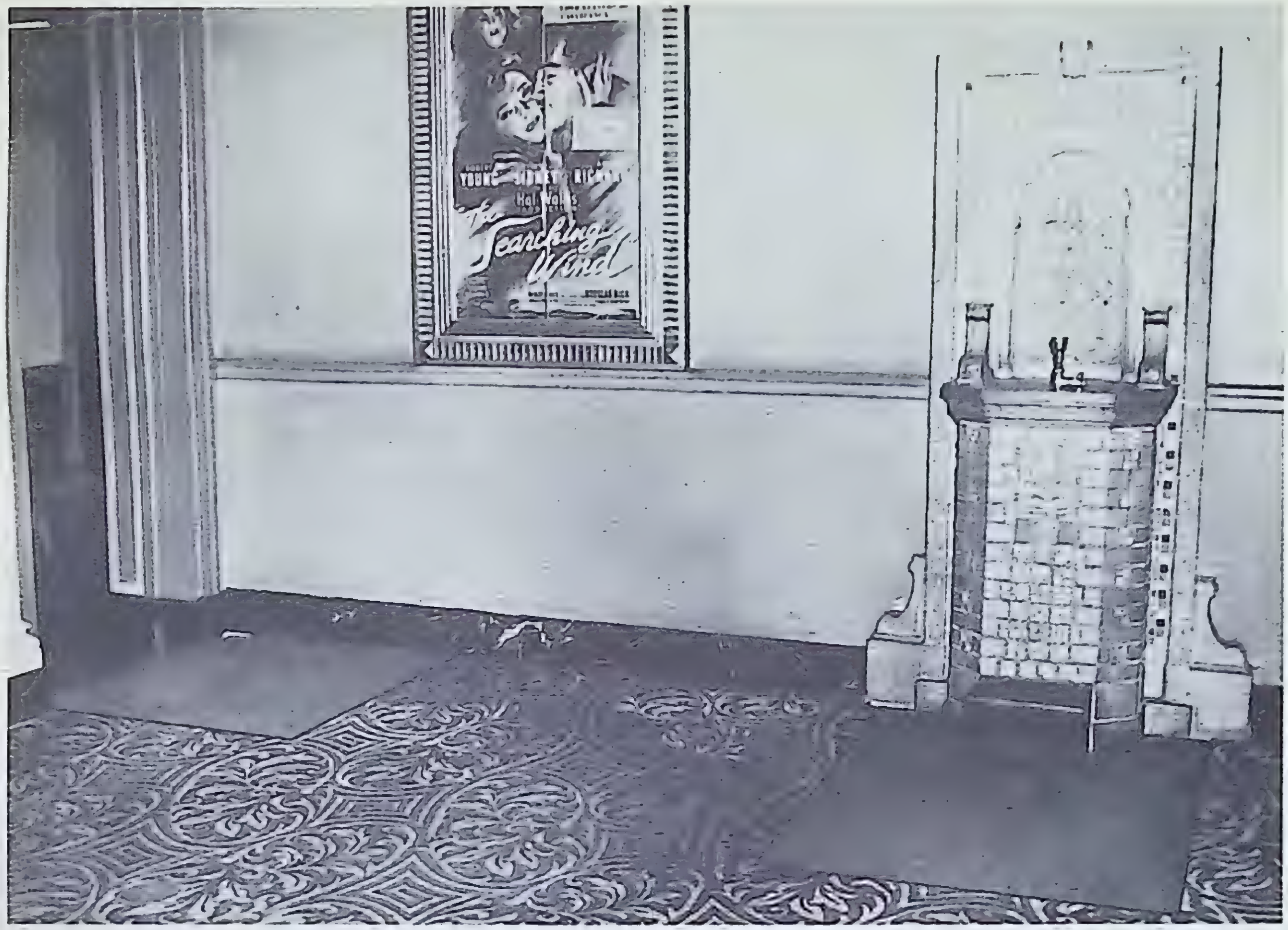
A. Where matting is used on carpets and lobby floors, make sure it is properly rolled up and placed in a cool spot. Avoid dangerous breaks as well as ends curling which can easily be prevented by rolling matting upside down.

B. Cleaning rubber matting before rolling is also important; and please remember - DON'T PILE HEAVY MATERIALS OVER YOUR RUBBER MATTING.

C. As a safety precaution, make sure when rubber matting is laid that ends are not curled up, as this creates a hazard.



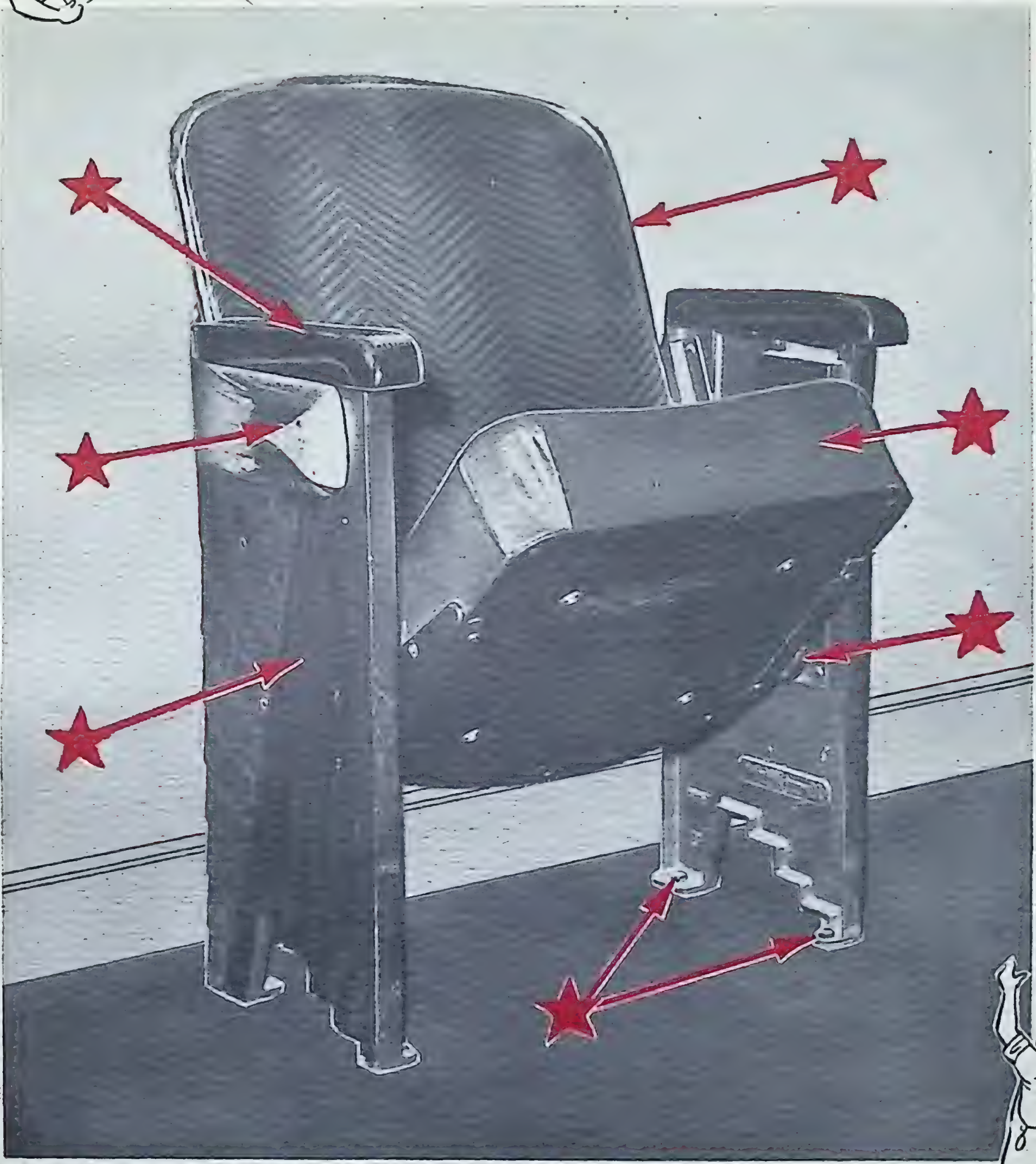



YOUNG
Hal Wallis
The Searching Wind

M&P
THEATRES

CHAIRS — SEATS

Chairs — Seat Maintenance



GUARD THESE DANGER POINTS FOR THE LONGER LIFE OF YOUR CHAIRS!

Chairs — Seat Maintenance

The importance of proper upkeep of seats, backs, and standards cannot be over-emphasized.

The component parts of the seats, needing attention as described below, include:

1. Bottom
2. Back
3. Standard
4. Hinges
5. Arm Rests
6. Aisle Lights
7. Mushrooms (usually near or under chair.)

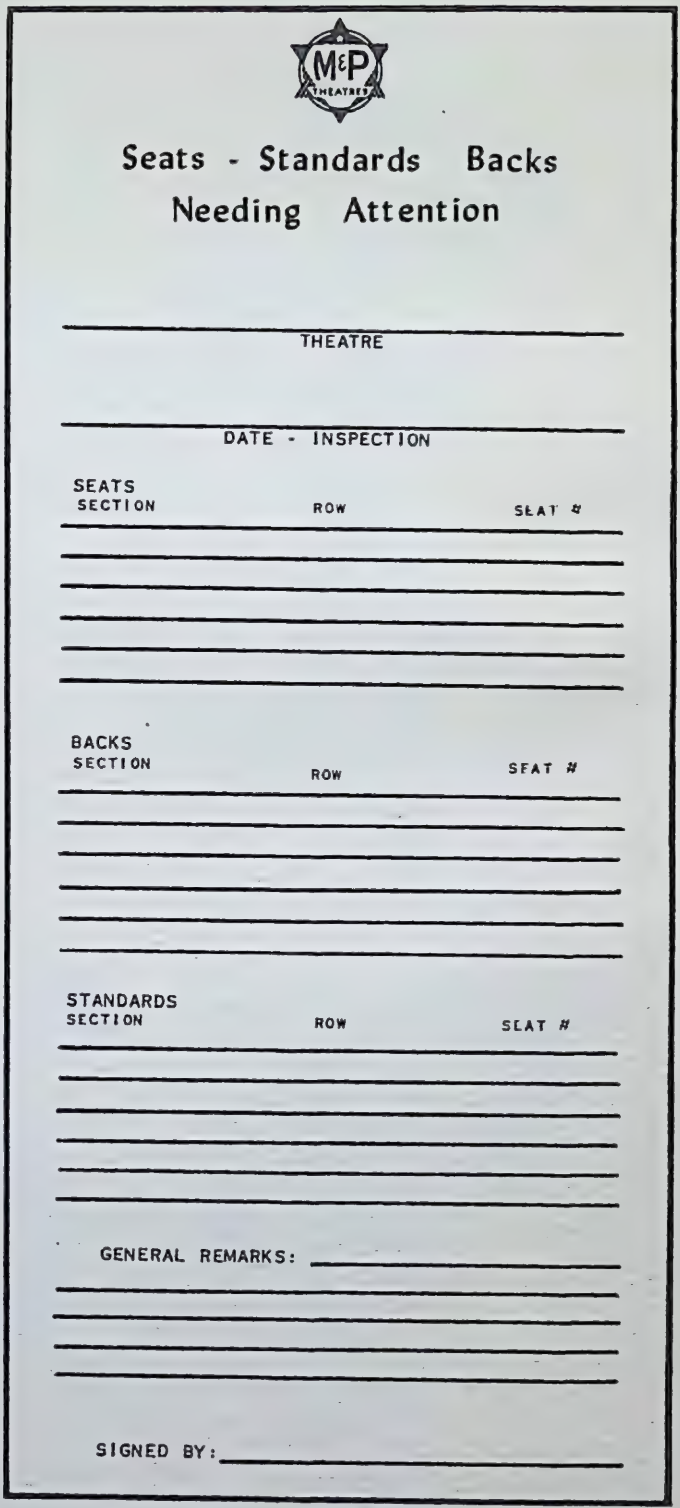
Seats should be inspected daily. A check list should be made of the entire auditorium, at each inspection.

The chart on the right could be used as a proper method of locating faulty seats, backs, standards, etc.

In order to expedite repairs, it is suggested that each theatre have on hand a few bottoms and backs of all sizes, ready for use, in addition to several spare standards. As soon as these replacements are used, the faulty backs and seat bottoms should be immediately repaired.

Back and Seat Attachment:

Examine by shaking the backs and seats of all chairs, especially standards. Tighten up all loose attachments. Use the wrench and screwdriver with care. Hasty and careless operation frequently burrs screws and deforms nuts, leaving cutting edges that will damage clothing.



M&P THEATRES

Seats - Standards Backs
Needing Attention

THEATRE

DATE - INSPECTION

SEATS SECTION ROW SEAT #

BACKS SECTION ROW SEAT #

STANDARDS SECTION ROW SEAT #

GENERAL REMARKS:

SIGNED BY:

Hinges:

Care should be taken that the proper tension is placed on all bolts attached to hinges so that seats will move freely. Make sure that anchorage to seat bottom is secured properly. Remove all burred screws.

Aisle Lights:

Aisle lights should be properly lamped. DO NOT USE COLORED LAMPS ON AISLE LIGHTS AT ANY TIME. Armored cable feeding aisle light should be properly secured to standard. Make sure that electrical connections to aisle lights are tight. Be sure to replace junction box covers if missing. Avoid careless mopping over and around connectors to aisle lights.

Mushrooms:

Care should be taken to keep all mushrooms tight. Do not change setting, as this is part of your ventilating system.

Arm Rests:

Secure arm rests properly. Have spare arm rests on hand. Make sure that arm rests are free from splinters.

Veneer:

If veneer becomes slightly slivered or broken, remove and sandpaper edges down smoothly, and where feasible, turn over from bottom. When veneer becomes split or beyond repair, replace at once with supply of new veneer that should always be kept on hand. In the process of upholstering a seat with a veneer bottom, be sure to sandpaper the edges of the veneer smoothly.

Cleaning:

Theatre chairs, i.e. backs, bottoms and standards should be kept in clean condition at all times.

A. Seat Bottoms:

Leather and veneer should be gone over periodically with warm water, mild soap and a damp cloth.

B. Seat Backs:

Veneer and leather should also be gone over periodically with warm water, mild soap and a damp cloth.

C. Mohair - Plush and other Cloth Materials:

Go over occasionally with a hand vacuum cleaner or stiff brush.

Patching:

Care should be taken to make sure that color or dye in patching material will not run. We recommend patching only as a temporary measure.

Interchanging of Seat Backs and Bottoms:

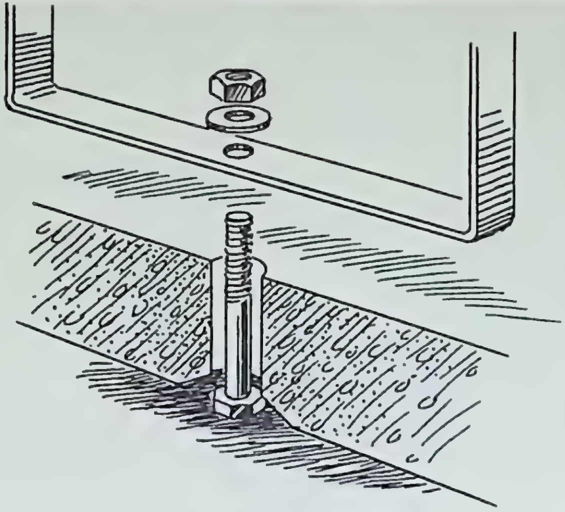
You can increase the life of your chairs considerably by a periodic interchanging of seat bottoms and backs. For example, often an end seat in a given row will receive more abuse than others. It is recommended that such seats or backs be interchanged within the given row or with sections that do not receive as much wear as others.

Floor Attachment:

A. A loose or broken floor standard not only can cause a strain upon the entire seat, causing loosening of the back hinge and seat itself, but can "spread" across the entire row, creating a bad hazard.

B. Keep standards tightly fastened to floor at all times.

C. If cement holding standard to floor is weak or poor, the following method should be employed to correct this condition. If concrete floor around expansion bolts becomes too large:



1. Drill hole with a star drill about two inches in depth.

2. Widen hole at bottom as above described.

3. Insert new carriage bolt 2½"x¼".

4. Using proper ladle, heat up lead-ite or anchorite until it dissolves.

5. After dissolving, fill up hole holding new carriage bolt.

6. Allow at least ten minutes to set.

7. Put standard into bolt and secure tightly with either a lock-nut or lock-washer with ordinary nut.

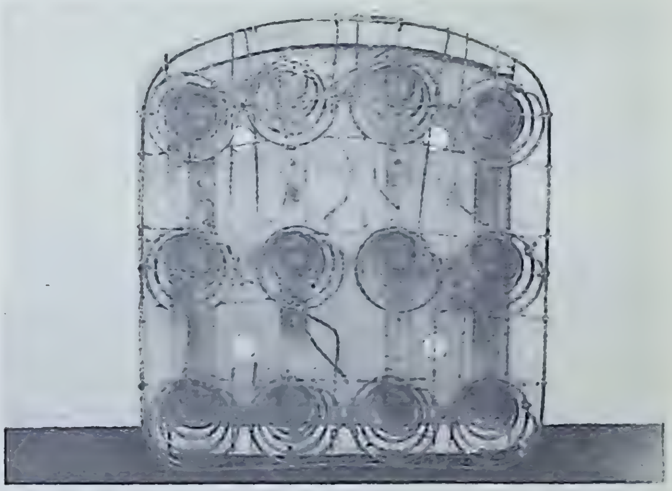
D. If the cement slab is thin, anchorage can be obtained by using a long toggle bolt.

E. If the underside of the slab is accessible, a plate can be placed on the underside and a long bolt run up through the floor and standard.

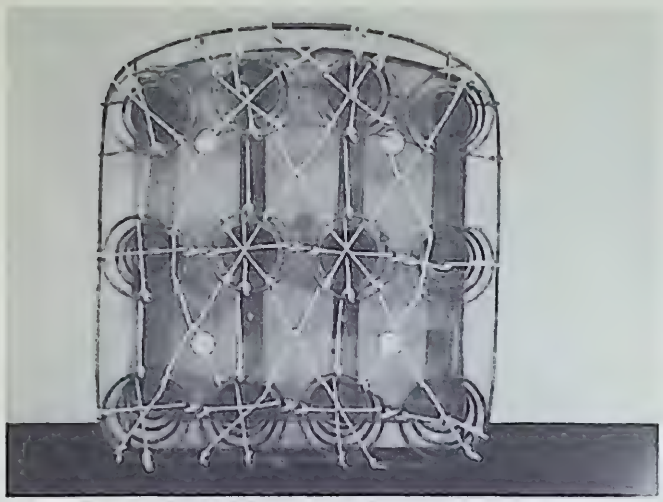
In the event that these items cannot be done locally, call in your maintenance department.

How To Upholster Seat Bottoms

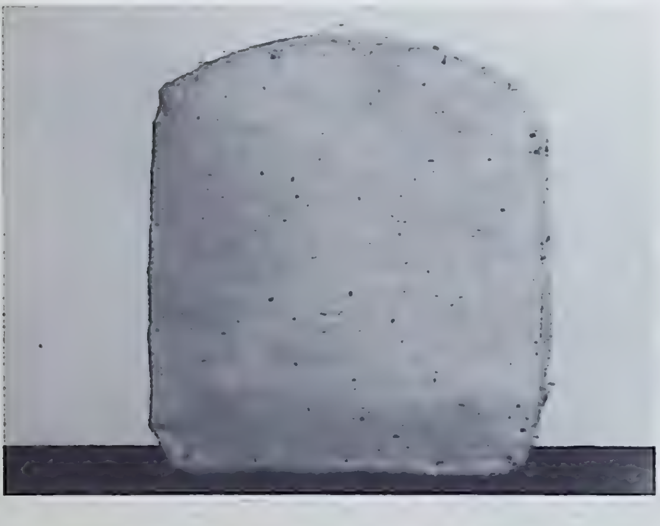
Seat cut and destroyed as photo shown above. All torn seat bottoms should be immediately replaced and repaired.



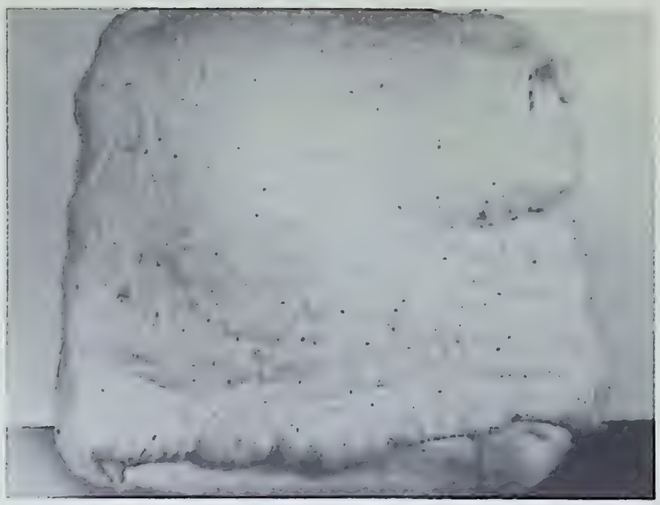
Seat should be stripped completely before recovering. CAUTION: Never put one cover on top of another. When seat is completely stripped, examine for broken springs. Above photo shows how wires can break with constant wear and cause injuries and damage to clothing. Before tieing springs and wires, spray with insecticide.



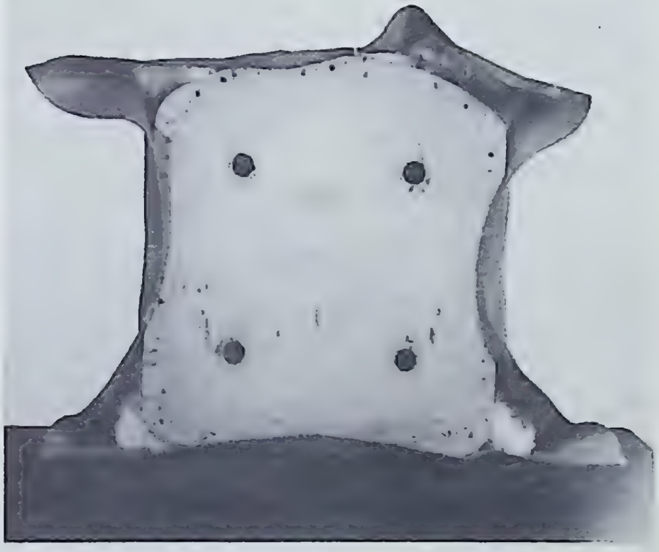
When springs or wires are broken, first remove all broken pieces. Tie all springs by using a regular upholsterer's spring twine obtainable from your maintenance department. Springs should be tied as photographed. Use only sufficient tension to prevent springs from being in any but a straight upright position. Make sure, when tieing is completed, tension will allow springs to move up and down but not sideways.



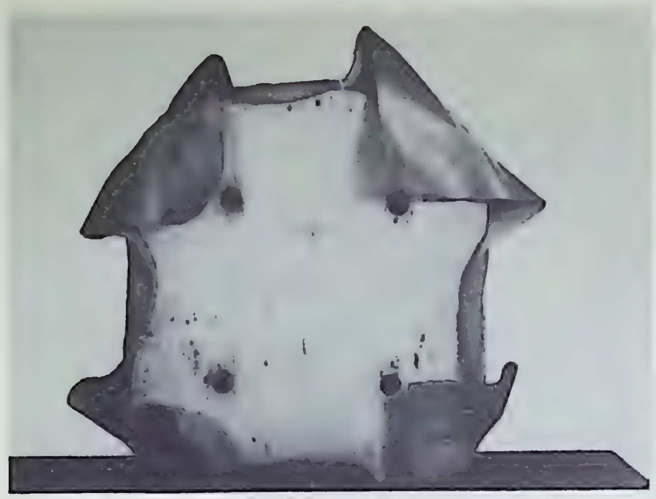
Cover springs with 10 oz. burlap, using a 4 oz. tack to anchor all four sides. Use sufficient tacks to keep burlap well secured. The burlap should then be sewed to wire edge around the entire seat by using a stitching twine and an upholsterer's needle.



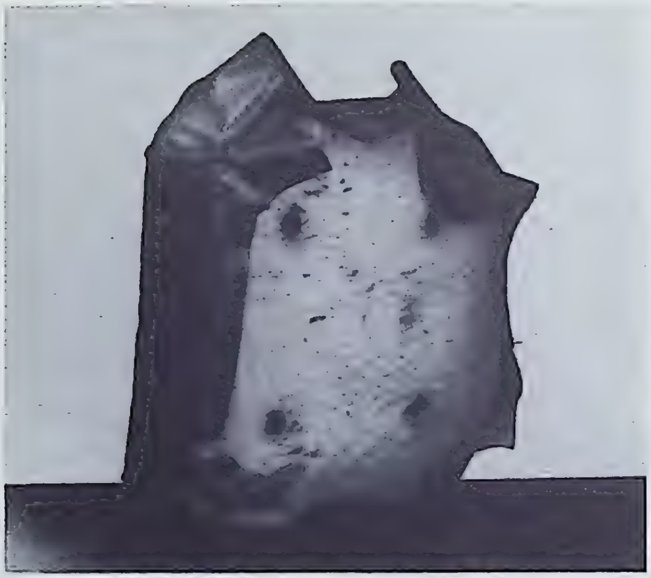
Put old stripping back with additional layer of cotton batting added.



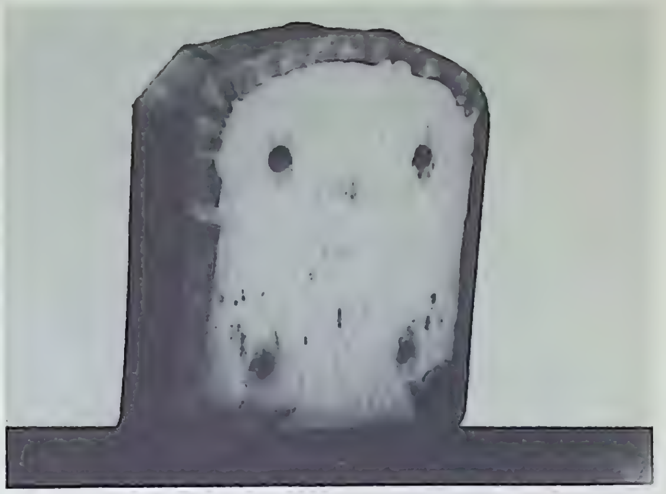
Cut leather to size needed which is usually 10½" higher and wider than seat bottom itself. Place seat bottom on center of leather, using sufficient tension to cause leather to wrinkle slightly. First tack front and back of seat, and then sides as described above, using only one tack on each end.



Using enough tension to have seat covering about 3½" in height, tack four corners as above shown.



This photo shows covering with one pleat on each end of front of seat bottom. Pleats are made by squaring off leather at each corner (shown above) and pulling leather with sufficient tension and firmness to remove all wrinkles from the covering itself.



As shown above all 4 corners of seat bottom have pleats facing each other. In making each pleat, be sure to use sufficient tension to remove all wrinkles from seat top covering. After all pleats have been completed, and all sides of cover tacked down well, surplus leather should be trimmed all around. (Above photo shows covering only partly trimmed for demonstrative purposes only.)

If possible, rub small wads of cotton soaked with insecticide on both corners of seat before replacing metal or wooden pan; also where feasible, set fine wire screening under breathing holes as precaution against vermin. Attach bottom and seat is ready for use.

Upholstering Seat Backs

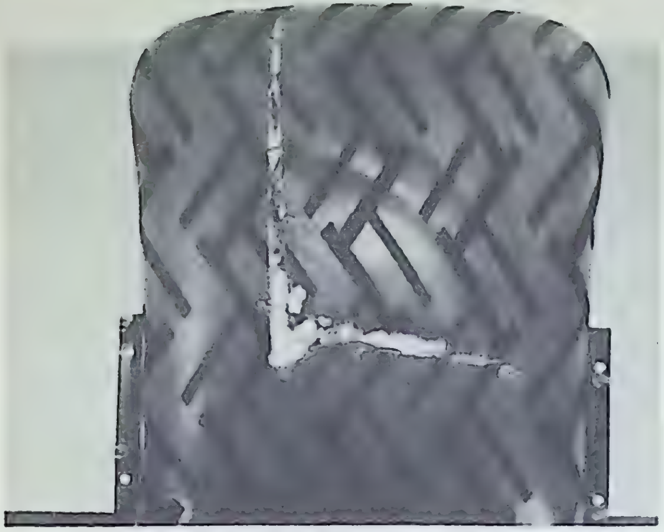
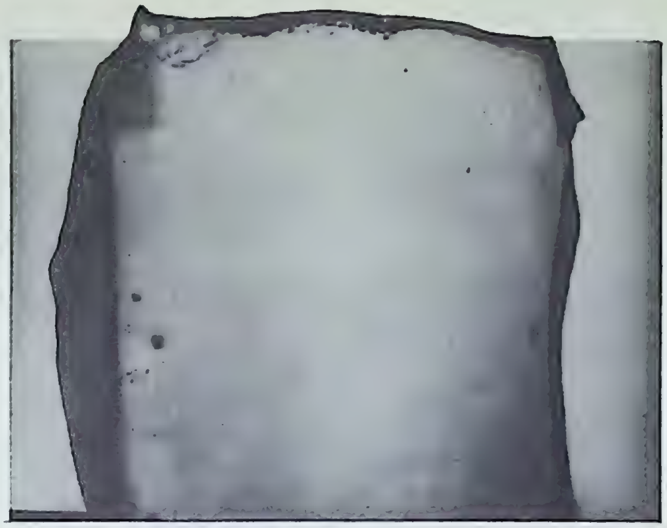
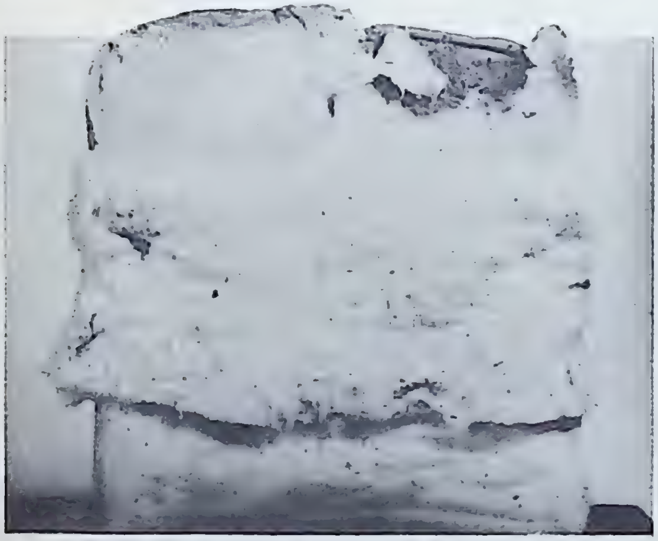


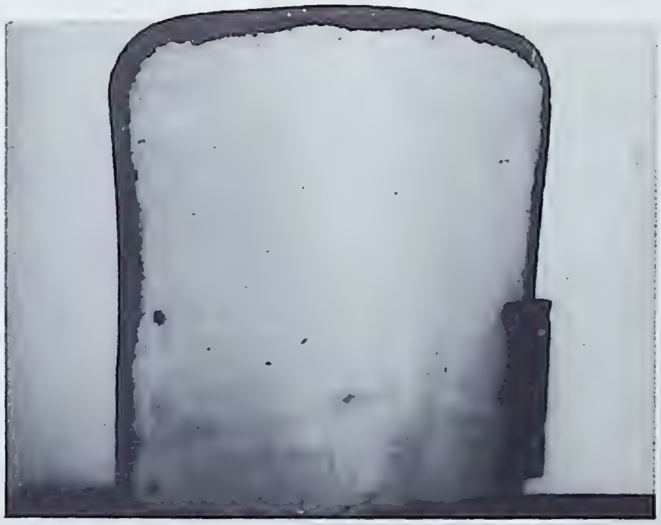
Photo shows cloth back damaged by cutting. If tear is small, this can be temporarily repaired, without removing back from seat, by sewing with ordinary thread and needle. If tear is beyond sewing, before recovering completely, remove all old material regardless whether leather or soft material is used.



Cut material approximately 3" more than back measures top and bottom. (The width of the average material is usually sufficient for two seat backs.) Place back of seat in center of new covering and by applying sufficient tension remove all wrinkles from front side.. First tack top and bottom, and then complete sides.



After removing damaged fabric, condition as described frequently occurs. That is, filling is pulled out. This space must be filled in with cotton if no other filling is available. Then proceed with a complete additional layer of cotten batten as above shown.



After completing the covering of the seat back and trimming surplus material down, as shown in above photo, proceed by first putting brackets back (if equipped with them) as shown in lower right hand corner of photo. Then attach metal or wood back whichever it may be.

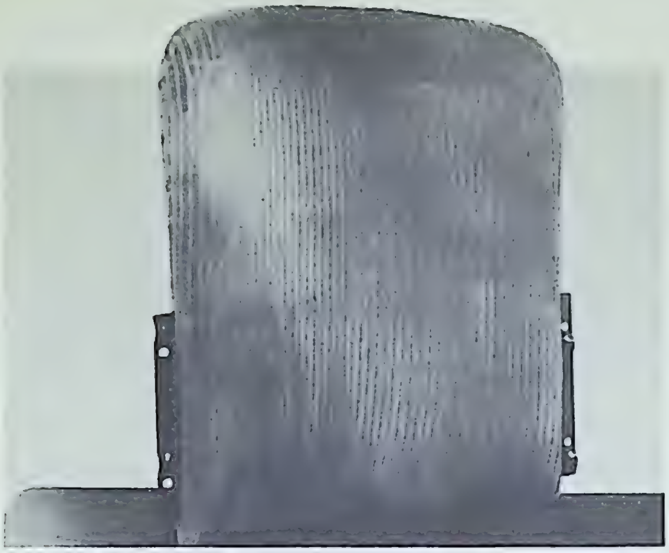
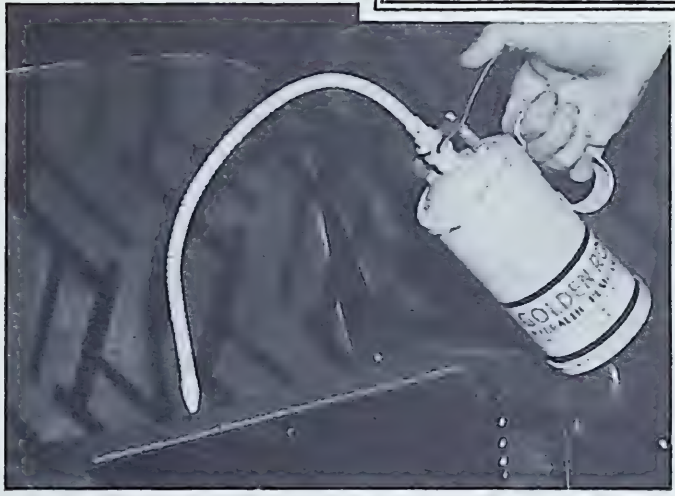


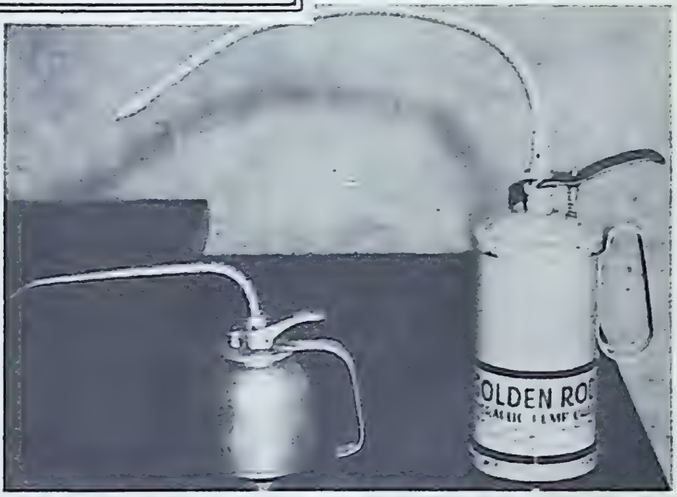
PHOTO AT LEFT SHOWS SEAT BACK COMPLETED AND READY FOR USE.

MAINTENANCE COSTS OF SEATS WILL BE REDUCED TO A MINIMUM IF ABOVE RECOMMENDATIONS ARE FOLLOWED AS SUGGESTED.

For further advice on this subject, contact your maintenance department.

VERMIN CONTROL





Vermin can be prevented by spraying seats at least once a month. Before spraying, seat bottoms should first be placed in upright position. The most important part of the seat needing spraying isthe entire section where the veneer or metal bottom is attached to the covering material, or wherever folds are made in the upholstery.

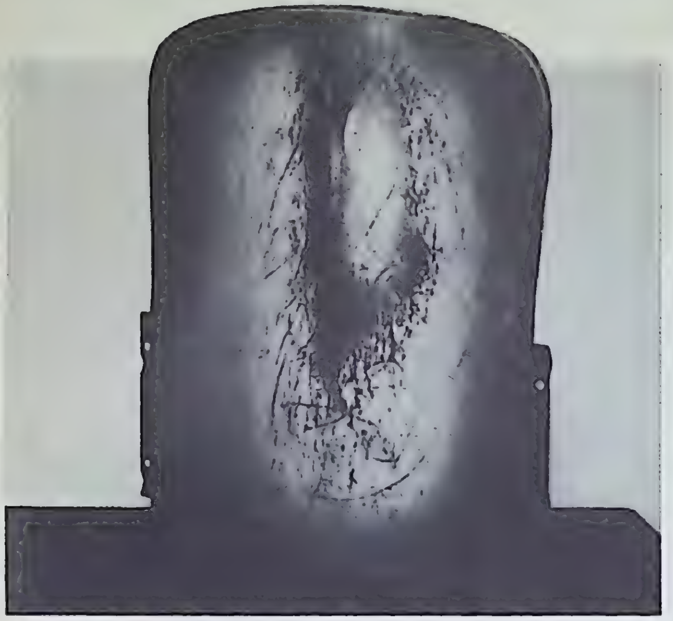
Care should be used in spraying seats to prevent insecticide from getting on leather or cloth covering. Careless spraying in this manner can cause color or dye in material to run and stain clothing.

Careless spraying can also cause a slippery condition on the floor, resulting in accidents.

We recommend that spraying of seats be done with a type of oil can similar to that pictured above. This can controls a narrow stream of insecticide which can keep spray within confines needed.

Photo above left clearly show where seats should be sprayed with an improved exterminator can.

NOTE: WHEN THROUGH SPRAYING, BE SURE TO WIPE ALL LIQUID FROM OUTSIDE OF CHAIR, AS IT MIGHT STAIN CLOTHING.



THIS PHOTOGRAPH shows a veneer chair which is in a badly worn and roughened condition. Veneer which has become slightly slivered or broken should be removed and the rough edges smoothed down carefully. If the veneer is split badly, it should be replaced at once with new veneer, and new veneer should be kept on hand for this purpose. The new veneer should be lightly sanded on the edges to a smooth finish, and thereafter it should be cleaned periodically with warm water and mild soap. Do not over-wet the veneer in cleaning.

ELECTRICITY

Maintenance Manual

ELECTRICITY

ELECTRICITY ...

> "AN IMPONDERABLE AND INVISIBLE AGENCY, CAPABLE UNDER DIFFERENT CIRCUMSTANCES OF PRODUCING LIGHT, HEAT, CHEMICAL DECOMPOSITION, AND OTHER PHYSICAL PHENOMENA."
>
> WINSTON DICTIONARY

ELECTRICITY

WARNING!

THIS CHAPTER ON ELECTRICITY CONTAINS MANY HELPFUL HINTS AND INSTRUCTIONS CONCERNING THE MAINTENANCE AND CARE OF ELECTRICAL CIRCUITS AND APPARATUS. HOWEVER, ELECTRICITY IS A HIGHLY DANGEROUS POWER, AND SHOULD NOT BE TAMPERED WITH BY THE LAYMAN. THE MANAGER SHOULD BE FAMILIAR WITH THESE INSTRUCTIONS, BUT UNDER NO CIRCUMSTANCES SHOULD HE ATTEMPT TO MAKE ELECTRICAL REPAIRS OR ADJUSTMENTS PERSONALLY.

ENTRANCE SWITCH

This switch is found where the electric service from the Utility Company enters the building.

The entrance switch carries the entire connected load of the building and may be a fused or circuit breaker unit. As a rule, this switch receives very little attention, although it is the most important switch in the entire system.

The connections on the switch should be tightened and the gaps between the switch and the switch jar, the fuse and the fuse holders, kept absolutely tight.

The lugs on the wire connections should be checked for looseness or poor face contact under the nut that holds it in place.

Pitting or arcing at any of these contacts is evidence of poor connections.

The contact surfaces may be cleaned with a very fine crocus cloth.

Be sure that the proper size fuses are installed in this switch. Also make sure that the switch is not overloaded.

The circuit breaker type of entrance switch does not require fuses. However, the switch make and break surfaces should be kept tight and clean.

The electrical system should be free of "grounds". In some localities a regular inspection for "grounds" is made by the City Wire Department, but, where this service is not available a test should be made by a competant electrician. If "grounds" are found, they should be corrected.

DISTRIBUTION PANEL

This panel separates the current supplied by the entrance switch into the required services for light and power.

From this point, the feeds supply the manager's panel, stage switchboard, projection booth, etc.

The recording meters supplied by the Electric Light Company are usually located on this panel.

All switches should receive the same care as that mentioned for the entrance switch.

All connections should be tight and fuses firmly in place.

Fuses should be the proper sizes for the loads.

If fuses blow, immediate steps should be taken to find the cause or correct the connected load to the circuit.

IF THE CUTOUTS IN THE DISTRIBUTION PANEL ARE PROPERLY MARKED SHOWING WHICH LINES THEY PROTECT, IT WILL MAKE IT MUCH EASIER TO LOCATE TROUBLE IF IT DEVELOPS.

SUB PANELS

These panels are placed in advantageous positions to control the circuits running to the lighting fixtures, motors, etc. which they in turn control.

ALL SWITCHES SHOULD BE LABELLED AS TO JUST WHAT THEY CONTROL.

It is important that the fuses receive the same attention as those on the other panel boards, checking for heat which may be caused by a loose connection, a "ground", or a defective switch or cutout.

The smaller switches in the branch circuits have a tendency to become loose in the jaws causing arcs and the final inability of the switch to operate. These should be frequently inspected and if loose, tightened at once.

FUSES

A fuse is a simple, cheap and safe circuit breaking device.

The correct size fuse for the circuit will protect both the wiring and the equipment operated by the circuit. The wrong size fuse can burn out equipment of extensive value, create hazard and TURN YOUR WIRING SYSTEM INTO AN ELECTRIC TOASTER.

When a fuse blows it is a signal that something is wrong. Either your circuit is overloaded, short circuited or grounded or has blown from heat developed from a loose connection in the area of the fuse connections.

Before inserting a new fuse, find out why the fuse blew and correct the cause immediately. DO NOT USE OVER 15 AMP. PLUG FUSES IN LIGHTING CIRCUITS.

Do not correct the trouble by using a fuse of larger capacity than required as you then run the chance of having the Fire Department instead of a fuse become your protector.

Some cities insist that the fusestat type of fuse be used in the plug fuse branch circuits. When the correct size fusestat plug fuse is installed in the cutout, it is impossible for anyone except an electrician to install an oversize fuse. For example, a circuit fused at 15 amperes would not take a 20 ampere fuse as it could not be screwed into the opening taking the 15 ampere size.

Spare fuses of ALL sizes should be on hand at ALL TIMES.

OUTSIDE WIRING

Outside wiring should receive close attention especially the wiring in the signs and marquees. Leaking roofs on marquees and signs cause considerable damage to the wires inside, also, to the sockets and lighting equipment on the marquee ceiling.

If leaks are found they should be repaired immediately before damage can be done to the wiring, etc.

Outside EXIT lights should be checked to see if they are firmly attached to the iron boxes. Also, the conduit runs to these fixtures, if mounted on the outside wall, require close attention. The conduit and boxes should be fastened securely to the wall of the building.

Marquees, signs and outside EXIT lights are the chief causes of serious grounds and should be kept in good condition.

ELECTRICITY CHARGES

Electricity charges are computed in

various ways by the Electric Light Companies.

THE DEMAND AND USE METHOD

The Electric Light Company sets up a Demand charge in Kilowatts.

The number of Kilowatts charged in the Demand is based on the average of the three highest peaks of Kilowatt use reached in an eleven month period. For example, if a theatre had peak loads of 51, 50 and 49 Kilowatts, the demand charge would be 50 Kilowatts at so much per Kilowatt.

Some Electric Light Companies change the Demand charge monthly based on the highest peak in the individual month.

PEAKS NEED ONLY 15 MINUTES USE TO MAKE A NEW DEMAND.

DEMAND CHARGE

The Demand charge is based on the fact that the Electric Light Company has to keep in operation the necessary generators and other equipment to take care of the theatre's requirements. This is sometimes called an Investment charge by the Electric Light Company. THE DEMAND CHARGE IS OVER AND ABOVE THE CHARGE MADE FOR THE USE OF THE CURRENT.

Example:- The theatre is wired for a load of 30,000 watts or 30 Kilowatts. The Demand is 30 Kilowatts.

This is the maximum load and seldom if ever, all used in one period of time. If this 30 kilowatts is used for any fifteen period, the Demand of 30 kilowatts would cost $60.00. This would be the cost even if the Demand dropped to 15 kilowatts for the rest of the month, which should cost $30.00. Thus, the "throwing on" of various loads should be carefully studied as to their application and use. Your Maintenance Department will gladly co-operate to enable you to secure the most for your Demand charges.

CONNECTED LOAD

In a few areas the Electric Light Companies charge for "connected load". This charge covers motors and other equipment, WHETHER OR NOT THEY ARE USED, that are connected to the Electric Light Company's lines.

If in an area where this type of rate is in use notify your maintenance department giving a list of all equipment that is definitely out of use.

SEPARATE POWER AND LIGHT CHARGES

Some Electric Light Companies have a separate charge for Light and Power, with a separate rate and Demand for each type of service. It has been found in some instances that combining these two rates through a common demand meter, substantial savings can be made.

The individual situation must be called to the attention of the Electric Light Company as some set their rates in such a way that the change is not allowed. The cost of the change in wiring is very low.'

REFRIGERATION

The electricity charges covering the use of the large motors necessary for refrigeration are generally set up on a special schedule of rates. It has been found, however, that this rate should be carefully checked against the possibility of simply adding the refrigeration to the present load.

For example, a small city theatre using a 50 ton refrigeration system supplies a large number of "commercial" customers with electric current. This gives the theatre a demand charge of $2.00 per Kilowatt and energy charges of 3/4 of a cent per Kilowatt hour. In this instance the refrigeration should not be set up on a special schedule because added to the regular load would make the cost of operation much less. Get in touch with your Maintenance Department on all questions regarding rates and their applications.

IN CASE OF ELECTRICAL SERVICE FAILURE

In case of complete or partial failure of your electrical current:

A. Shut off all line switches
B. Call your electric company

Immediately after a complete or partial power service failure and, if possible, before resumption of complete service, all line-switches to motors, generators, rectifiers and other electrical equipment using power should be disconnected. Simultaneous starting of all motors will cause overloads and excessive "demand".

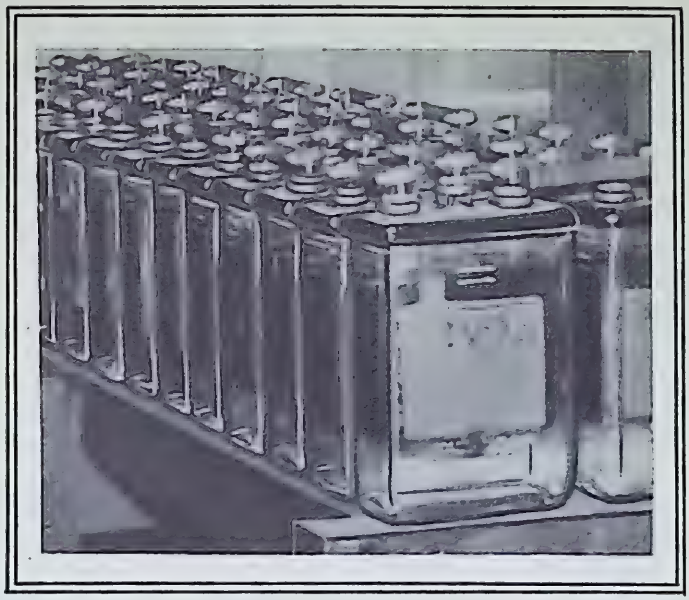
After resumption of complete service each line-switch should be connected and the equipment it controls carefully checked to determine if it is operating properly.

After resumption of power service, it is particularly advisable to check to see that three phase equipment is operating on all three phases and not "single phasing" which can result from the blowing of one of the three fuses or from the failure of control equipment to properly function.

"Single-phasing" can be identified by failure of motor to start accompanied by a loud humming. If this condition is found, shut off motor immediately.

After resumption of service, switches should be connected and equipment checked for proper operation.

Failure to follow the above suggestions may result in costly and inconvenient damage to electrical equipment.



CARE OF 120 VOLT WET CELL BATTERIES

Keep the electrolyte well above the plates at all times, if any additional fluid is required add distilled water.

Maintain the specific gravity of the electrolyte at the density specified by the manufacturer of the battery.

Keep all the cells cleaned and free from any sediment.

It is good practice to cover the terminals with a film of vaseline to prevent corrosion.

Test each cell at least once a week with a hydrometer to determine the density.

Maintain the insulation of the cells from grounds and where a series of batteries are installed, care should be taken that batteries do not come in contact with each other.

Begin the recharging of the battery immediately after the end of discharge or as soon thereafter as practical, never let charging current fall below the eight hour rate, except towards the end of the charge. A fully charged battery should give a hydrometer reading of 1225.

VOLTAGE

The voltage on both the light and power circuits should be checked at the entrance switches to make sure that the theatre is receiving the correct voltage from the Electric Light Company.

ELECTRIC HEATERS - PORTABLE

These are the "plug-in" type of electric heater used in Box Offices, etc.

These heaters should not be "plugged-in" to your regular light circuits, but should have a separate circuit to carry their high wattage load, as the load on the various types runs from 660 to 1300 watts. The necessity for a separate circuit is readily seen.

The heaters should be kept clean.

The open unit type should be used only in an area free of all combustible material such as paper, cloth, etc. WE DO NOT RECOMMEND THE USE OF OPEN ELEMENT HEATERS.

TICKET MACHINES

Using a small paint brush, keep the knife section free of ticket dust.

This should be done before use every day. Remove all accumulated ticket dust from inside the case at least once a week.

Put one drop of Kerosene on each ticket flap once a week.

Do not polish the top plate or if you insist on it being polished, cover each flap with Scotch tape and remove when finished. One ticket flap clogged or corroded from using metal polish can ruin the timing of accurate mechanism, causing expensive repair.

ELECTRIC MODELS

Fill the oil or grease cups on motor once every two months.

Check motor brushes every three months and clean carbon dust from motor armature.

If your ticket machine fails to operate or if you have any electrical or mechanical trouble PULL OUT THE WALL PLUG AT ONCE. This may prevent a burned out motor.

If the ticket machine fails, do not permit unauthorized persons to attempt repairs. Advise your Maintenance Department at once.

Ticket flaps should be on machine at all times.

VACUUM CLEANERS

These are motor driven and require the same care given to all motors.

Oil or grease the fan bearing as recommended by the manufacturer of the particular cleaner, and check the carbon brushes on the motor, replacing same when worn down.

The vacuum cleaner can perform efficiently only when the amount of dirt in the bag or tank is kept at a minimum.

Large amounts of dirt in the bag decrease the suction of the cleaner. This can burn out the motor.

Bag should be cleaned out immediately after the cleaner is used.

The electric cord should be removed from the wall receptacle by pulling out the plug and not pulling the wire.

Pulling the wire will result in broken contacts, blown fuses and a vacuum cleaner out of use until repaired.

Do not extend the length of the hose supplied by the manufacturer.

Check all floor tools and hoses for leaks, as these cut down suction.

Make sure belt action is in order and that brush is running in the right direction.

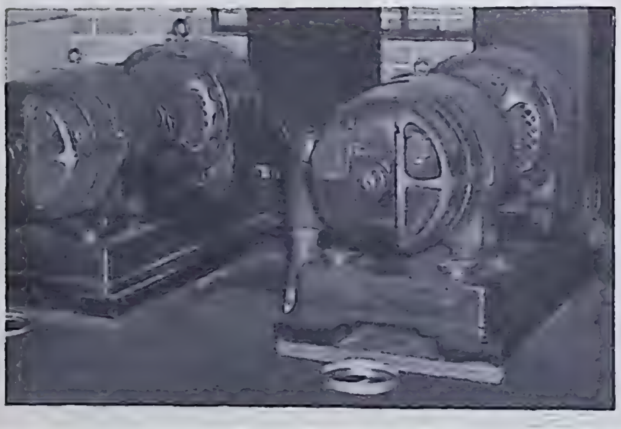
CARE OF VACUUM CLEANERS

1. Lubricate fan bearings regularly.
2. IMPORTANT! Turn off current before you pull the plug.
3. DON'T PULL plug out of socket by cord - pull the plug socket.
4. Clean bag every day or at least every other day.
5. Check carbon brushes and replace them when worn short.
6. Check vacuum tank for maximum service.
7. Motors should be sent to maintenance department at least once a year for overhauling.
8. Cord and hose must be handled carefully. Don't just throw them in a corner carelessly.
9. Be sure to use switch on vacuum cleaner when starting and stopping.
10. Check for holes in bag and repair promptly if damaged. Holes will reduce suction value of vacuum cleaner.

PLEASE NOTE:

We wish to stress the fact that HEAVY DUTY vacuum cleaners are more practical for theatres with larger carpet areas. The regular model used in homes is generally practical for theatres with smaller carpet areas.

MOTORS



On D. C. motors the principal thing is to be certain that brush pressures are correct on the commutator, and that the brushes work freely in the brush holders.

The commutator itself and the slots between the segments should be kept free and clean of grease and dirt. The surface of the commutator should be cleaned off with a canvas cloth or very fine sandpaper occasionally, not too often; if sandpaper is used with care it is okay, but never use emery paper or emery cloth as it will make the surface of the commutator uneven and cause arcing.

Carbon tetrachloride may be used also, if available, to clean commutator.

The interior of the motor housing should be blown out frequently, preferably with an electric blower, to remove dust. Any accumulations of oil, grease and any foreign matter around the base should be cleaned off.

All insulated motor leads need to be cleaned of any grease, which tends to break down insulation.

Motor should be watched for overloading. A motor when overloaded will run hot. When it is uncomfortable to the touch, that is, the housing or framework, it is a sure sign that the particular motor is laboring with an overload.

Of course, the more precise way would be to use instruments. To determine properly scientifically whether an electric motor is overloaded, put an ammeter on the line and note its reading, that is, the amperage which it draws to check it against the rating of the motor, as indicated on its name plate.

If the commutator is known to be clean, the brushes have correct tension, etc., and if a motor is still arcing, then it is the time to call in an expert.

A commutator which is worn so that its surface is untrue and is pitted will often cause considerable arcing. If this condition exists it would be advisable to call in a competent concern to remove the armature and have it turned down possibly in the lathe or stoned down. Never allow your own man to stone-down a commutator unless he is absolutely familiar with the mechanism and has had experience along these lines.

The proper grade of oil or grease should be selected for each type of motor. Use the lubricants recommended by your lubricant manufacturer or the oil company - they usually provide charts specifying a certain grade of oil or grease for the particular type of machine which it is to be used on. At least once a year all lubricating oil should be drained from bearings or the oil wells and the bearings should be flushed out with gasoline so as to remove all injurious sediment before putting in fresh lubricant. Make certain that the oil wells have been blown out with air or some type of blower so as to remove all remaining traces of gasoline, as otherwise the gasoline will tend to dilute the fresh oil you put in.

Set up and follow an oiling schedule, oiling at least once a month. The schedule is advisable and is comparable to the thousand miles servicing required for automobiles.

All worn gear cases should be likewise treated. All bearings that are packed with grease, except where they are permanently sealed should likewise be treated.

On sealed sleeve type bearings there is usually a felt washer placed in such a manner as to prevent oil from running out along the shaft. In time these become saturated and deteriorated to the extent that they are no longer effective. Where this seems to be happening and every other means has been taken to clear up the difficulty have your service man replace these felt washers wherever required.

A. C. motors - Some A. C. motors have commutators and some do not; some have slip rings and some different types of brushes. However, the maintenance problem is the same as for D. C. motors. that is, they must be kept clean and properly lubricated.

If a three phase motor fails to come up to speed and you have trouble in starting, check the fuses in each phase as sometimes a fuse will blow in one phase and the other two will operate. This can burn out the motor and should be corrected immediately.

All motor fuses should be of the proper size as specified by the Underwriters. This is important and you should make sure that no fuse is accidentally put in on the line which would be of too much amperage to properly protect the motor against a burn out.

Also motor fuses, branch circuit fuses and main panel fuses should be tested for tightness, contacts and also for cleanliness of contact surfaces. The links in the fuses should be replaced about every one to two years, as good maintenance practice. It is not always wise to wait for a fuse to blow before replacing the links.

Keep a little record of each motor - make up a data card and from time to time enter on the card the record of the brushes, when changed, type, make, when motor lubricated, or last changed, any parts added, also when any repairs are made. Or keep a service chart like that shown and a separate lubrication chart.

If motors need removing for repairs, do not clip wires. Unsolder the wires as cut leads may increase the repair cost.

When a motor has rubber mountings to lessen vibrations, these mountings must be kept clean. Oil weakens and destroys rubber and due to the scarcity of rubber, extra precautions to preserve it should be taken.

MOTOR GENERATORS:

A. Check alignment of motor and generator shafts and keep couplings tight. Misalignment of shafts and loose couplings cause vibration, increased wear and part replacements.

B. General arcing can be caused by the following:

1. Brushes not seated on commutators.
2. Poor contacts.
3. Mica not properly undercut.
4. Dirty commutators.
5. Improper grade of brushes.
6. Improper brush tension.

C. Dirty and arcing commutators can cause pitting and heating, shortening the life of the generator and increasing the maintenance cost.

D. Oil bearing housings should be flushed out every six months and refilled with fresh oil of the proper grade.

E. If a ball bearing motor generator has been out of service for a time, the bearing covers should be removed, the old grease cleaned out and replaced with new grease.

F. When generator is not in use, a proper protective covering should be placed over generator to insure against dirt, moisture, and any other foreign elements.

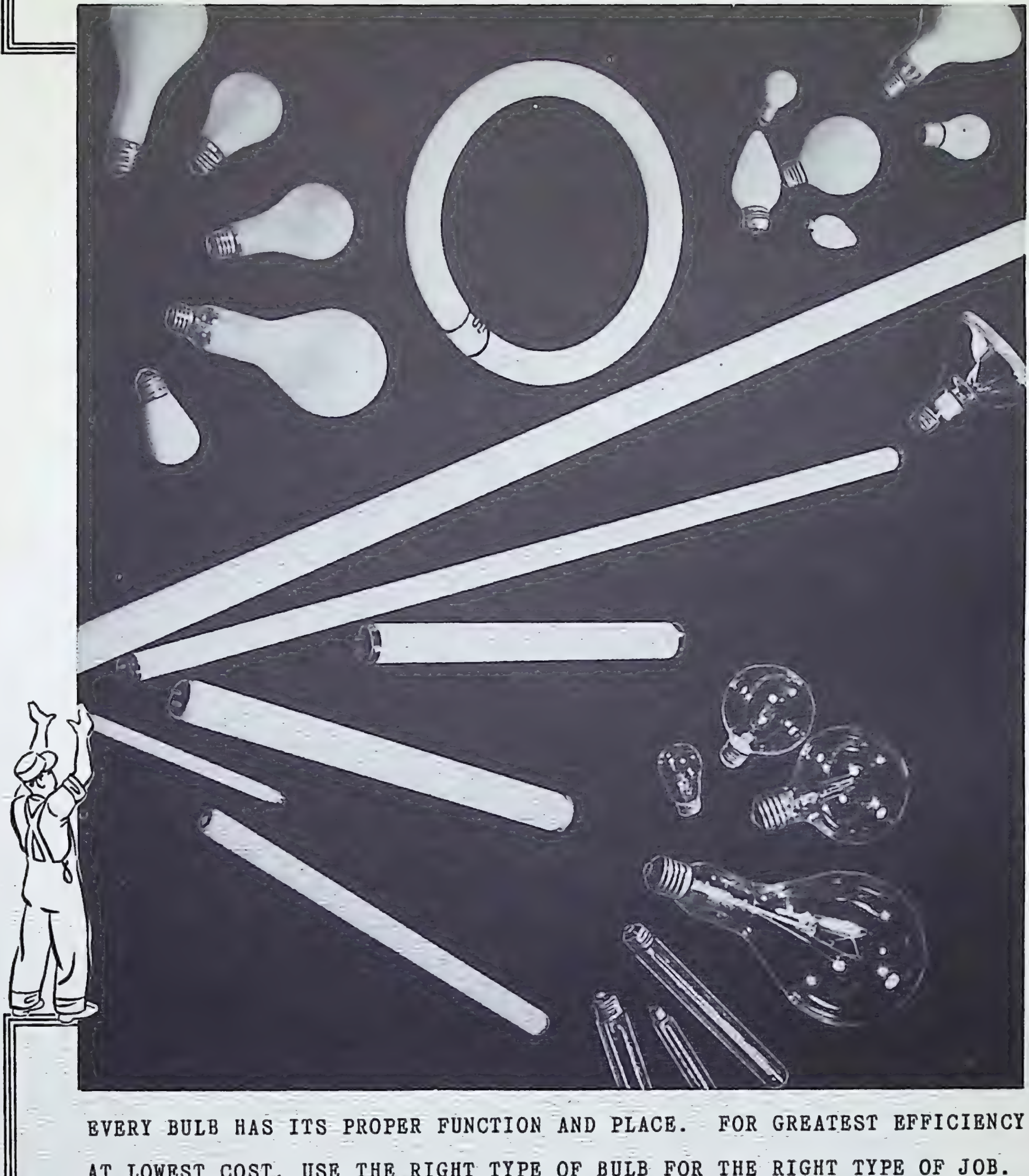
MOTOR INSPECTION

THEATRE TOWN DATE

MOTOR-TYPE	LOCATION	DUTY	FUSES		CURRENT		CONDITION	NAME PLATE DATA
			SIZE	LOCATION	STARTING	RUNNING		

REMARKS;

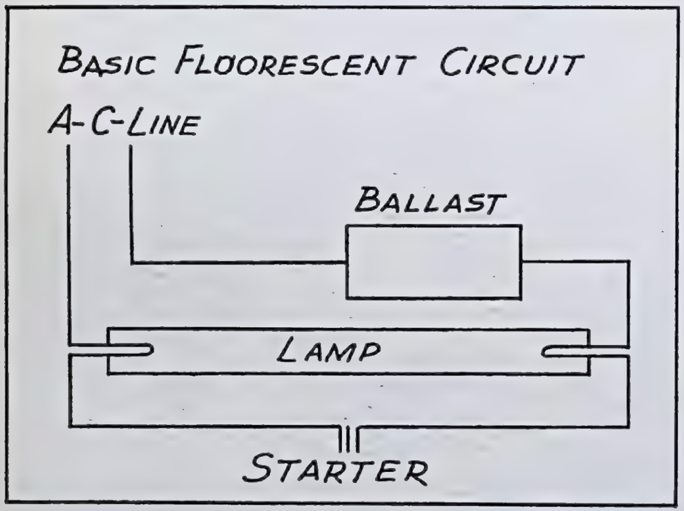
LAMPS – Various Types



EVERY BULB HAS ITS PROPER FUNCTION AND PLACE. FOR GREATEST EFFICIENCY AT LOWEST COST, USE THE RIGHT TYPE OF BULB FOR THE RIGHT TYPE OF JOB.

LAMPS

A lamp manufacturer can increase the average life of any incandescent lamp. This can only be done by decreasing the light produced or increasing the current consumed. SHORT LIFE MEANS MORE LIGHT. LONG LIFE MEANS LESS LIGHT. When you burn lamps under their rated voltage, you WASTE current and lower the efficiency of the lamp. When you burn lamps at over voltage, you shorten the life, waste electric current and lower the efficiency of the lamp. Burn your lamps at the correct voltage to maximum lamp life and light output. Do not over-lamp your circuits. Your branch circuits have been installed and fused to take a number of lamps of a certain wattage. OVER - LAMPING CAN CAUSE UNBALANCED CIRCUITS, OVER LOADED WIRES AND A DEFINITE HAZARD. DO NOT USE OVER 1200 WATTS ON LIGHTING CIRCUITS. CONTACT YOUR MAINTENANCE DEPARTMENT BEFORE CHANGING THE SIZES OF LAMPS IN MARQUEES OR UPRIGHTS.



Fluorescent Lamps

The fluorescent lamp is an arc lamp having no filament but having an electrode at each end. The tube contains a small amount of argon gas to conduct the electricity across the electrodes when starting. Also a small quantity of mercury. The inside of the lamp is coated with a pigment that will fluoresce in mercury vapor.

There is a ballast to control the current and aid in starting the lamp, a starter to start the lamp and a special fixture to take the equipment. These lamps are supplied in 6 to 100 watts in the regular line. The wattage governs the length; for example, the six watt lamp is nine inches long while the 100 watt lamp is five feet long.

The lamps can be obtained in a wide range of colors which are particularly adaptable for use in the theatre.

The normal failure of a fluorescent lamp is generally indicated by the lamp flashing on and off. The lamp will glow red on each end, with or without a flash of light across the entire length. The ends of the lamp will be darkened. A lamp in this condition should be replaced by a new one immediately.

Effect of Temperature on Fluorescent Lamps

As fluorescent lamps perform most efficiently at a temperature of from 60 to 90 degrees Fahrenheit, there is a marked variation in light output in extreme weather.

For extremely cold locations use the cold weather fluorescent lamps. These are made in the 40 watt size only and will give satisfactory service.

To obtain cold weather efficiency in the standard fluorescent lamp, it must be enclosed so that it can build up some heat each time that it is sighted. Fluorescent lamps size 15 watts to 40 watt have an average life of approximately 2500 hours.

If a fluorescent lamp will not light, the condition may be due to a defective starter, wrong size starter, a blown fuse in the circuit, or a burnt out ballast.

If you know that other fixtures on the same circuit are working satisfactorily, the trouble is definitely only in the fixture that will not light. Replace the starter with a new one. Try a lamp that you know is good. If this lamp will not light, it indicates that the trouble is in the wiring of the fixture, the ballast or poor socket contacts. Removing and replacing the lamps several times will clean the socket if the current is left on the fixture.

If the lamp will not light after the foregoing, the trouble is a broken wire or a defective ballast which must be repaired by a competent electrician.

Caution

Starters for 15 and 20 watt fluorescent lamps, also starters for the 30 and 40 watt fluorescent lamps, are the same size and look exactly alike.

Be sure to read the size of the starter before using. This is given on the top of the starter.

Spotlight and Floodlight Lamps

These are the lamps used in Baby Spots, Spotlights throughout the theatre and in the units used on the roof to illuminate parking areas. These are short life lamps and should be the correct size for the particular unit in use. OVER LAMPING CAN CAUSE SERIOUS DAMAGE. Consult your Maintenance Department regarding use and application of these bulbs.

Lamp Stocks

Do not order large stocks of lamps that will not be used for an extended period of time. These unused lamps can represent a tremendous amount of waste and idle money.

There is a correct lamp for every location in the theatre, one that will give satisfactory results in safety, decorative effect and cost of operation. Consult your Maintenance Department for helpful information on these applications.

Lighting Fixtures

Consult your Maintenance Department on all questions pertaining to lighting Fixtures. Lighting fixtures should be kept clean at all times. Dirty bulbs or reflecting surfaces cut down lamps output. YOU PAY FOR THIS ELECTRIC CURRENT. WHY NOT OBTAIN MAXIMUM VALUE? Dirty fixtures and lamps can cut down efficiency as much as 30 percent. For example, you can have an electric light bill of $100.00 of which $30.00 is wasted due to dirt.

The bulbs used in cove or trough lighting are frequently neglected. Cleaning in these locations can produce startling results in increased light output. AUDITORIUM CEILING FIXTURES SHOULD BE INSPECTED TWICE A YEAR TO SEE IF THE STEMS, CHAINS AND CANOPIES ARE SECURE.

If these are the type that can be lowered for re-lamping, the safety bars or winches over the ceiling should be checked for mechanical security. Also check plug in boxes and cables for loose connections, worn insulation, etc If these fixtures are not equipped with safety bars, if lowering cables show signs of wear or if cable is frayed, do not attempt to lower fixture. Notify your Maintenance Department immediately.

CATWALKS SHOULD LEAD TO ALL FIXTURES OVER THE CEILING.

AFTER RELAMPING FIXTURES REMOVE ALL OLD BULBS AND LAMP WRAPPERS.

Recessed Fixtures

Fixtures recessed in the ceiling and enclosed ceiling domes require close attention. Due to the close proximity of the lamps to the fixture wiring, the heat has a tendency to destroy the insulation of the wires. Over a period of time this breakdown of insulation can cause short circuits and grounds.

Wall Brackets

Wall brackets should be secured to the wall. Loose and broken wall brackets definitely cause trouble.

Parchment Shades

Parchment shades used on wall brackets should be secured by clips that keep the paper part of the shade away from the lamp. The heat of the lamp applied directly to the shade is a definite hazard.

Fluorescent Fixtures

Fluorescent fixtures require special cleaning attention. A 40 watt fluorescent lamp will give 2½ times the light output of a standard 40 watt lamp. This is true only if the fluorescent lamp is kept clean. It takes 48 inches of fluorescent lamp to give this efficient service. If the top of the lamp is coated with dust, the light output drops to a minimum. Clean fixtures and lamps give satisfactory results with full value received for the amount paid to the Electric Light Company.

Aisle Lights

DO NOT USE COLORED LAMPS IN AISLE LIGHTS.

Aisle lights should be checked weekly for the following:

a. Loose connections
b. Secure fastenings to seat standards
c. Broken glass
d. Be sure lamp is burning

SUGGESTED INVENTORY FORM FOR THEATRE MANAGERS

TYPE OF LAMP	UNIT COST	STOCK	ITEMS REC'D	INVOICE NUMBER	COST OF ITEMS REC'D	TOTAL STOCK	STOCK	USED THIS MONTH	COST OF LAMPS USED THIS MONTH
6w - S-14 Frost									
6w - S-14 Clear									
6w - S-14 Yellow									
10w - S-14 Frost									
10w - S-14 Old Rose									
10w - S-11 White, Inter. Base									
15w - A-17 Frost									
15w - A-17 Yellow									
15w - A-17 Old Rose									
15w - A-17 Amber									
15w - A-17 Flame									
15w - T-10 Cand. Base									
25w - A-19 Frost									
25w - A-19 Amber									
25w - A-19 Flame									
25w - A-19 Yellow									
25w - A-19 Natural Blue									
25w - T-10 Clear, Tubular									
40w - A19 Frost									
40w - T-8 Clear, Tubular									
40w - T-8 White, Lumiline									
50w - A-19 Frost									
60w - A-19 Frost									
60w - A-19 Natural Ruby									
60w - A-19 Natural Blue									
60w - A-19 Coated Blue									
60w - T-8 Clear, Lumiline									
100w - A-23 Frost									
100w - A-23 Natural Blue									
150w - A-25 Clear									
150w - A-25 Frost									
200w - PS30 Clear									
250w - G-30 Clear, Spot									
300w - PS35 Frost, Reg. Base									
300w - PS35 Clear, Reg. Base									
300w - PS35 Silver Bowl									
150w - Par 38 Flood									
150w - Par 38 Spot									
1000w - G-40 Spot, Mogul Base									
1000w - G-40 Spot, Mogul, Pre-focus									
1000w - PS52 Spot, Mogul Base									

TOTAL COST OF LAMPS $________

ELECTRIC BILLING SERVICE DATES FROM ________ TO ________

METER NO.	LAST MONTH	THIS MONTH	KW.HRS.USED	RECAPITULATION
57946				TOTAL
164229				BLD'G
164391				THEATRE
164481				RATE PER
164482				1 KW. HRS.
TOTALS				
BLD'G Meters				COST OF SERVICE
LIGHT				
POWER				
TOTALS				

SUPPLIES	
TOTAL COST OF SUPPLIES	
COST OF LAMPS USED	
COST OF ELECTRIC SERVICE	
COST OF SUPPLIES	
SALARIES	
TOTAL COST OF DEPARTMENT FOR MONTH OF ________	

FORM 555 5-43 F.E.CO. 100 PADS

REPORT OF THEATRE METER READINGS

THEATRE & TOWN Strand, Dorchester, Mass

WEEK ENDING April 25, 1946

Day and Date	POWER				Day's Consumption		LIGHT				Day's Consumption		Power K.W.H.	Light K.W.H.	Explanation of Fluctuations
	Meter No. 1		Meter No. 2				Meter No. 1		Meter No. 2						
	Previous Reading	Current Reading	Previous Reading	Current Reading	No. 1	No. 2	Previous Reading	Current Reading	Previous Reading	Current Reading	No. 1	No. 2			
6/19	06668	06838	4942	4942	170		47185	47304	55437	55437	119				
4/20	06838	07062	4942	''	224		47304	47545	55437	55818	241	381			Refrigeration Plant
4/21	07062	07295	''	''	233		47545	47660	55818	55928	115	110			Refrigeration Plant
4/22	07295	07395	''	''	100		47660	47880	55928	55928	120				
4/23	07395	07495	''	''	100		47780	47899	55928	55928	119				
4/24	07495	07643	''	''	148		47899	48022	55928	55928	123				
4/25	07643	07808	''	''	164		48022	48161	55928	55928	139				
					1139						976				

Power Constant________

Light Constant________

NOTE - Day's Consumption figures are simply meter readings. K.W.H. are determined by multiplying readings by your constant that appears on your electric light bill.

FORM 1506 REV. 3-38
PRINTED IN U.S.A.

MONTHLY LAMP INVENTORY

THEATRE Esquire LOCATION Boston, Mass. DATE 10/25/46

WATTAGE	VOLTAGE	TYPE BULB	COLOR	NUMBER ON HAND 1ST OF MONTH	NUMBER RECEIVED DURING MONTH	NUMBER USED DURING MONTH	NUMBER ON HAND NOW	REMARKS
10	120	S-14	Yellow	120	none	72	48	
10	120	S-14	Rose	84	none	16	68	
10	120	S-14	I.F.	72	none	8	64	
15	120	A-15	I.F.	43	none	4	39	
25	120	A-19	I.F.	240	none	60	180	
40	120	A-19	I.F.	74	none	11	63	
60	120	A-19	I.F.	240	none	28	212	
75	120	A-21	I.F.	18	none	3	15	
100	120	A-21	I.F.	24	none	6	18	
150	120	PAR-38	Flood	2	12	4	10	
300	120	PS-35	Clear	3	12	4	11	
20	120	T-12	Gold Fluor.	12	none	5	7	
40	120	T-12	White Fluor.	9	none	2	7	

THIS COPY TO BE FORWARDED
ON FIRST OF EVERY MONTH TO
GENERAL MAINTENANCE DEPARTMENT.

I CERTIFY THAT THE ABOVE INVENTORY IS CORRECT.

MANAGER

TAX INFORMATION

The prices shown on this Schedule do not include any State and City Sales and Use Taxes, or Federal Excise Taxes levied on Electric Light Bulbs and Tubes and on lamps designed for Photographic services. The following tax symbols, shown in the List Price Column, indicate lamps on which the Federal Excise Tax will be passed on to the Purchaser as a separate charge and lamps that are not subject to Federal Excise Tax:

T—On Lamps so designated, the Federal Excise Tax will be billed as a separate item at 10.4% of the List Price. However, on lamps purchased for original installation at specified net prices, the Federal Excise Tax will be billed at 19.7% of the net billing price.

P—On Lamps so designated, the Federal Excise Tax will be billed as a separate item at 10.4% of the List Price. However, on lamps purchased for original installation at specified net prices, the Federal Excise Tax will be billed at 19.7% of the net billing price

N—Lamps so designated are not subject to Federal Excise Tax.

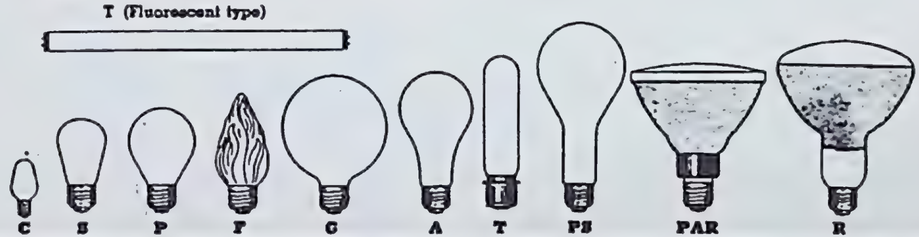
1. **Lamps should be ordered by Abbreviations** and the specific voltages desired. Abbreviations which are complete without voltage include series lamps listed by lumens and amperes, F lamps, and the lamp numbers for H and S lamps.
2. **Lamps not specifically listed** will be ordered by complete specifications including watts, volts (lumens and amperes for street series lamps), bulb, base, finish and service.
3. **Special lamp orders,** except for special etching, may be filled within the limits of 10 per cent, except that on orders for 10 lamps or less there will be no shortage or excess. Orders for lamps with special etching may be filled within the limits of 5 per cent, except that on orders for less than 40 lamps the shortage or excess may not exceed two lamps.
4. **Voltage limits** shown as 115–125 indicate that the lamps are intended for use on circuits with voltages normally falling within these limits and are designed at a voltage suitable for such use; the prices listed do not apply to lamps ordered for individual voltages within such range.
   (a) **Standard Voltage,** *as referred to herein*, includes 115, 120 and 125 volts. **High Voltage** includes 230 and 250 volts.
   (b) **Voltage Codes** used in this form to indicate stock are as follows:

VOLTAGE CODES INCLUDING STANDARD							
1	115, 120	**4**	120, 125	**7**	115, 125	**10**	110, 130
2	115, 120, 125	**5**	115	**8**	110		
3	120	**6**	125	**9**	130		

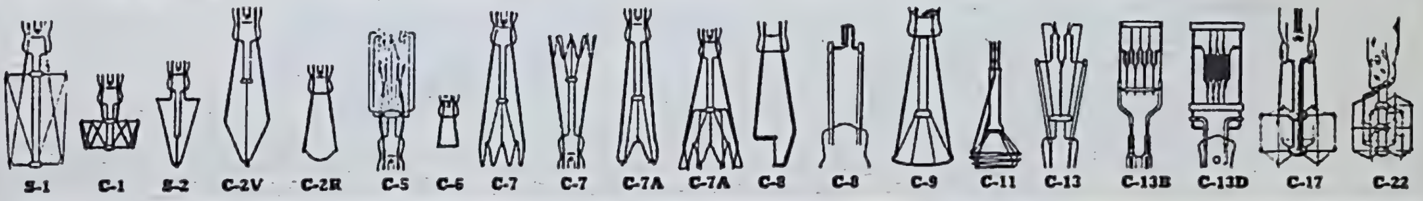
VOLTAGE CODES INCLUDING HIGH		
1	230, 250	
2	250	
3	230	

5. **Bulbs** are of soft glass and are clear, unless otherwise stated.
6. **Burning Position** for all lamps is "Any" unless otherwise stated.
7. **Supplementary Lamp** Life, Lumens, or Approx. Volts are approximate figures, should not be quoted as specification figures and are not guaranteed.
8. **Specially Designed Auxiliary Equipment** must be used with F, H, S and Germicidal lamps to produce proper electrical values. For these types, the wattages are approximate; for total, add auxiliary watts. Germicidal lamps are designed for service other than illumination.
9. **Plane of Base Pins** for Bay. Cand. based lamps will be at right angles to the plane of the filament or lead wires, unless otherwise stated.
10. **Major Locking Eyelet** for Cand. Pref. based lamps, which is that eyelet equidistant from the other two, will be at right angles to the plane of filament or lead wires unless otherwise stated.
11. **Light Center Length** is the average measurement for which the lamp is designed, subject to manufacturing tolerances. The light center length is the distance from the center of light source to the following point for the base used: Screw bases—bottom base contact; Mogul Bipost—shoulder of post; Medium Bipost—bottom of bulb (base end); Bayonet Candelabra and Medium Bayonet—top of base pins; Medium and Mogul Prefocus—top of base fin; Prong—nut, washer or shoulder of base prong; S. C. or D. C. Prefocus—plane of locating bosses of prefocusing collar.
12. **Maximum Over-all Length** is the distance from the top of bulb to bottom of base. Measurements given are shortest maximum guaranteed not to be exceeded at price listed.

BULB designations consist of a letter to indicate its shape and a figure to indicate the approximate diameter in eighths of an inch.



FILAMENT designations consist of a prefix letter to indicate whether the wire is straight or coiled, and a number to indicate the arrangement of the filament on the supports. Prefix letters include: S (straight)—wire is straight or slightly corrugated; C (coiled)—wire is wound into a helical coil or it may be deeply fluted; CC (coiled coil)—wire is wound into a helical coil and this coiled wire again wound into a helical coil; R (ribbon)—wire is flat in cross section; SR—straight ribbon filament; CR—coiled or fluted ribbon filament. Shape of mounts and usual burning positions:



EXTRA CHARGES FOR SPECIAL FEATURES

Extra charges will all be based on the list price of the specifically listed lamp. Special feature rules may be applied only when the type of lamp desired is not already specifically listed, and do not apply to Germicidal, Lumiline, F, H, S, Projector, Reflector, Silvered or Type RF lamps, except that the extra charges for etching will apply to Projector, Reflector and Silvered lamps.

Unless otherwise shown under the special feature, order lamps with special features from 2, except where 1 or 15 is shown as making the basic lamp, in which case order from the factory specifically listed.

Special Feature Desired	List Price of Basic Lamp	List Add'l Charge for Special Feature
Inside Frosted "A" Bulb Lamps Furnished Clear	Less than $1.00	$0.05
Inside Colored or Outside Coated red, blue, green, yellow, amber-orange, flametint, ivory, old rose, and inside colored white. Inside coloring applies only to vacuum lamps in A-17, A-19, A-21, S-11 (except with candelabra screw base), and S-14 bulbs. *Order from 2*	Less than $1.00	.10

White (entire bulb outside coated) is standard for vacuum lamps, and for gas-filled lamps in bulbs 2⅞" and smaller diameter. Exceptions—for lamps in daylight, photographic blue, and natural colored bulbs, and tubular lamps for showcase, country home, train, and home appliance services, all frosted is standard.

All Frosted (entire bulb outside coated) is standard for gas-filled lamps in bulbs larger than 2⅞" diameter, for lamps in daylight, photographic blue, and natural colored bulbs, and tubular lamps for showcase, country home, train, and home appliance services

White Bowl (hemisphere opposite base outside coated) of Heavy Density is standard for vacuum lamps, and for gas-filled lamps in bulbs of 2⅞" and smaller diameter; extra heavy density is standard for gas-filled lamps in bulbs larger than 2⅞" diameter; light density (frosted) is standard for lamps in daylight, photographic blue, and natural colored bulbs. Lamps listed at the same price clear and white or all frosted, will be furnished outside white bowl at the usual list additional charge. Inside frosted "A" bulb lamps will be furnished clear or inside frosted white bowl at the usual charge for white bowl, there being no charge for the use of the clear bulb. Inside White Bowl may be furnished in PS-25, and larger PS bulbs at the same price as outside white bowl

Inside Frosted may be furnished in any clear PS-25 and larger PS bulbs, and S-14 bulbs

The list additional charges apply only to standard coatings

List Price of Basic Lamp	List Add'l Charge for Special Feature
Less than $1.00	.05
$1.00 to 1.99	.10
2.00 to 2.99	.15
3.00 to 3.99	.20
4.00 to 4.99	.25
5.00 to 5.99	.30
6.00 to 6.99	.35
7.00 to 7.99	.40

Daylight bulbs will be furnished clear or inside frosted according to the basic lamp listed, at the following list additional charges

Natural Colored bulbs are furnished in the manufacturer's standard colors only. Natural colored lamps are regularly furnished in clear bulbs; for "A" bulb lamps listed inside frosted, the natural colored additional charges will apply to the list price of the inside frosted lamp, there being no additional charge for the use of the clear bulb. Natural ruby and natural amber lamps are regularly furnished in light shade. Dark ruby and dark amber lamps used in photographic work will be furnished only when definitely specified, and at the same prices as the corresponding light shade lamps. Natural blue does not include daylight or photographic blue.

Daylight and Natural Colored features do not apply to lamps listed with heat resisting glass bulbs.

Bulb	Daylight	Natural Colored	
		Amber, Blue, Green	Ruby
A-17, 19	$0.25	$0.40	$0.60
A-21	.30	.45	.65
A-23	.35	.55	1.00
PS-25	.50	.60	1.20
S-11	.30	.....	.....
S-14	....	.40	.60
T-6½	.30	.....	.....
T-10 (5⅝" M.O.L. or less)	.30	.....	.....

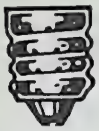
Unskirted Medium Screw Base Lamps may be furnished in Left Hand Medium Screw or Medium Bayonet bases for $0.10 list additional charge.

Train Lighting Lamps may be furnished in 30 and 60 volts at the same prices as the respective 32 and 64 volt lamps listed herein.

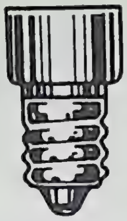
Abbreviations Used Under Lamp Bases

Min.	Miniature	Mog. or Mg.	Mogul	Skt.	Skirted	S. C. Bay.	Candelabra size where used as abbreviations
Cand.	Candelabra	Bay.	Bayonet	Pref. or Pf.	Prefocus	D. C. Bay.	
Inter.	Intermediate	S. C.	Single Contact	Bip.	Bipost	S. C. Pref.	
Med. or Md.	Medium	D. C.	Double Contact	3 C.	3 Contact	D. C. Pref.	
Admed.	Admedium						

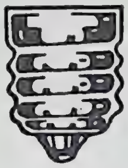
(Abbreviations are as used in Large Lamp Ordering Guide)



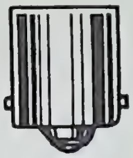
Candelabra
Cand.



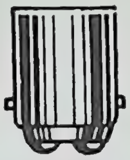
Candelabra Skirted
Cand. Skirted



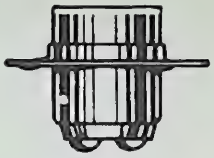
Intermediate
Inter.



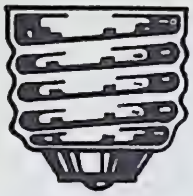
Single Contact Bayonet Candelabra
S. C. Bay.



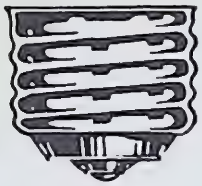
Double Contact Bayonet Candelabra
D. C. Bay.



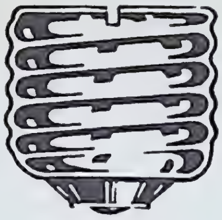
Candelabra Prefocus
S. C. Pf.
D. C. Pf.



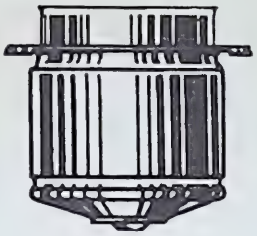
Medium
Med.



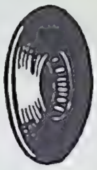
Three Contact Medium
3 C. Med.



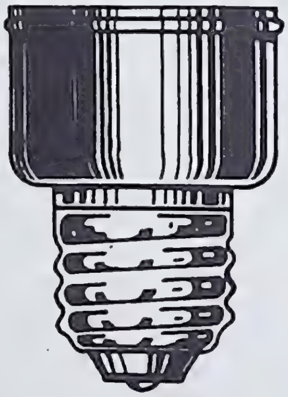
Admedium
Admed.



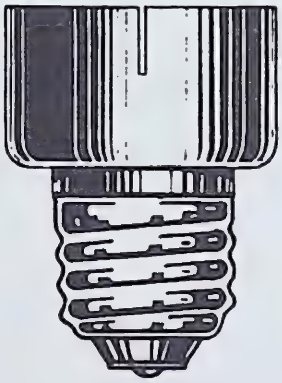
Medium Prefocus
Med. Pf.



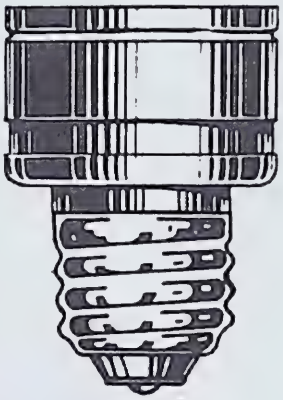
Disc
(*Lumiline*)



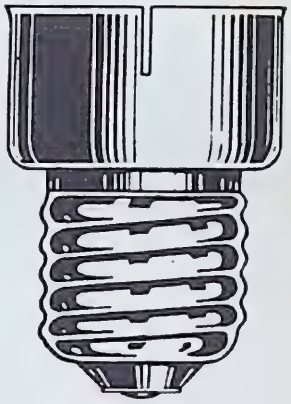
Medium Skirted
Med. Skt.



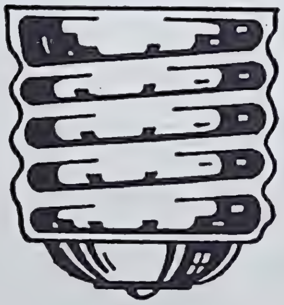
Medium Skirted
Med. Skt.



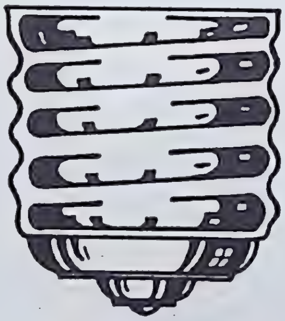
Medium Skirted
Med. Skt.



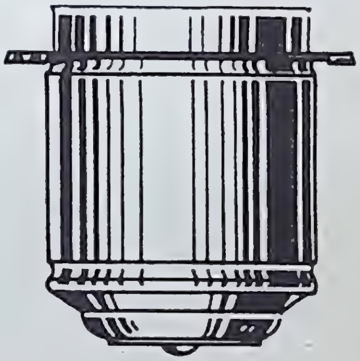
Admedium Skirted
Admed. Skt.



Mogul
Mog.

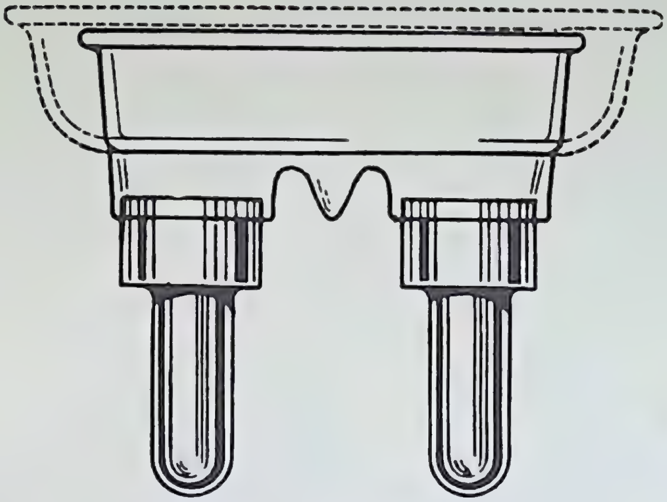


Three Contact Mogul
3 C. Mog.

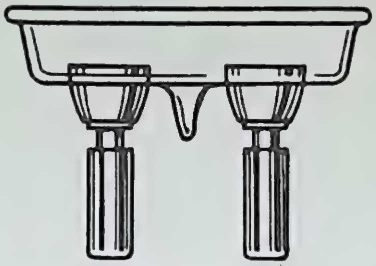


Mogul Prefocus
Mog. Pf.

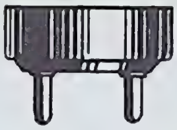
(Abbreviations are as used in Large Lamp Ordering Guide)



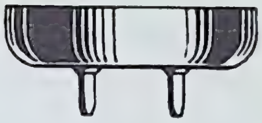
Mogul Bipost
Mg. Bip.
(Two Sizes)



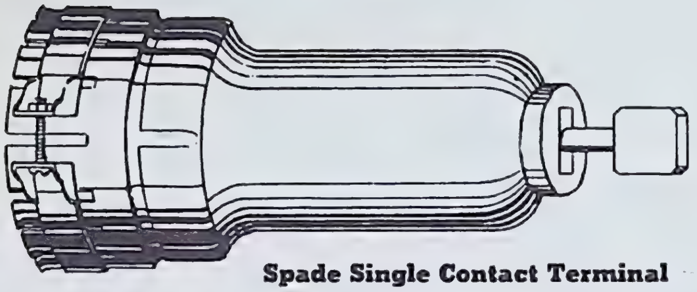
Medium Bipost
Md. Bip.



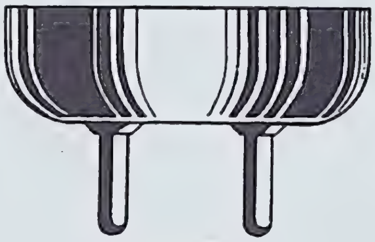
Medium Bipin
Med. Bipin
(T-8 F Lamp)



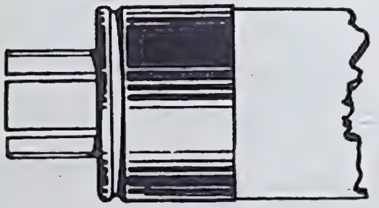
Medium Bipin
Med. Bipin
(T-12 F Lamp)



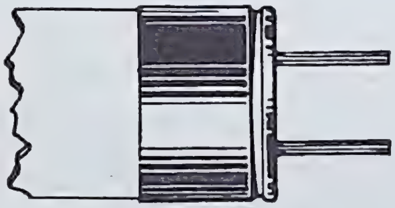
Spade Single Contact Terminal
S. C. Term.
(3000-Watt A-H9 Lamp)



Mogul Bipin
Mog. Bipin
(T-17 F Lamp)

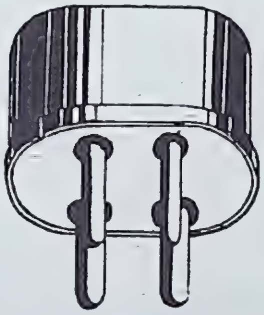


3-Prong

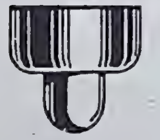


2-Prong

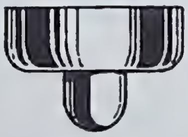
(Type RF Lamp)



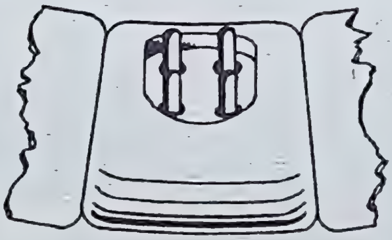
Oval Small 4-Pin
(4-Watt Germicidal)



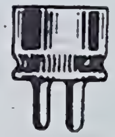
Single Pin
(T-6 Slimline)



Single Pin
(T-8 Slimline)



4-Pin
(Circline)



Miniature Bipin
Min. Bipin
(T-5 F Lamp)

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn. Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
3	S-6	Cand.	Std.	Clear	**3S6/5**	**$0.25 T**	SUPP	10–120	B C-7A	3000 12	.... 1⅞
6	S-6	Cand.	30	Train and Cty. Home	**6S6**	**.30 T**	SUPP	10–120	B C-2V	1500 53	.... 1⅞
			Std.	Clear	**6S6**	**.16 T**	STD	10–120	B C-7A	1500 40	.... 1⅞
				Outside Ctd. Red (2)	**6S6/R**	**.24 T**	SUPP	10–120	B C-7A	1500	.... 1⅞
				Outside Ctd. White (2)	**6S6/W**	**.21 T**	SUPP	10–120	B C-7A	1500	.... 1⅞
			135, 145 and 155	Indicator	**6S6**	**.45 T**	SUPP	10–120	B C-7A	1500 35	.... 1⅞
		Inter.	Std.	Indicator	**6S6/7**	**.26 T**	SUPP	10–120	B C-7A	1500 40	.... $1\frac{11}{16}$
6	S-14 *Sign & Dec.*	Med.	Std.	Clear	**6S14**	**.16 T**	SUPP	6–120	B C-9	1500 38	2½ 3½
				Inside Frosted	**6S14/IF**	**.16 T**	SUPP	6–120	B C-9	1500 37	2½ 3½
				Inside Col. Amber-Orange	**6S14/AO**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
				Inside Col. Blue	**6S14/B**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
				Inside Col. Green	**6S14/G**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
				Inside Col. Red	**6S14/R**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
				Inside Col. Yellow	**6S14/Y**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
				Inside Col. White	**6S14/W**	**.21 T**	SUPP	6–120	B C-9	1500	.... 3½
7	C-7 *Night Light*	Cand.	120	Clear (1)	**7C7**	**.11 T**	STD	10–120	B C-7A	2000 50	.... 2⅛
				White (1)	**7C7/W**	**.13 T**	STD	10–120	B C-7A	2000	.... 2⅛
				Outside Ctd. Moonlight Blue (1, 2)	**7C7/MB**	**.12 T**	SUPP	10–120	B C-7A	2000	.... 2⅛
				Outside Ctd. Red (1, 2)	**7C7/R**	**.12 T**	SUPP	10–120	B C-7A	2000	.... 2⅛
10	S-6	Cand.	High	Indicator	**10S6/10**	**.40 T**	SUPP	10–120	B C-1	1500 60	.... 1⅞
10	S-11	Inter.	Std.	Clear	**10S11N**	**$0.15 T**	STD	6–120	B C-7A	1500 80	1⅝ $2\frac{5}{16}$
			Sign & Dec.	Inside Col. Amber-Orange	**10S11N/AO**	**.20 T**	SUPP	6–120	B C-7A	1500	.... $2\frac{5}{16}$
				Inside Col. Blue	**10S11N/B**	**.20 T**	SUPP	6–120	B C-7A	1500	.... $2\frac{5}{16}$
				Inside Col. Flametint	**10S11N/FT**	**.20 T**	SUPP	6–120	B C-7A	1500	.... $2\frac{5}{16}$
				Inside Col. Green	**10S11N/G**	**.20 T**	SUPP	6–120	B C-7A	1500	.... $2\frac{5}{16}$
				Inside Col. Red	**10S11N/R**	**.20 T**	SUPP	6–120	B C–7A	1500	.... $2\frac{5}{16}$

(continued Page 50)

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
10	S-11 (CONTINUED)		Std. Sign & Dec.	Inside Col. White	**10S11N/W**	**.20 T**	STD	6–120	B C-7A	1500	.... 2 5/16
				Inside Col. Yellow	**10S11N/Y**	**.20 T**	SUPP	6–120	B C-7A	1500	.... 2 5/16
		Cand.	Std.	Clear	**10S11/79**	**.25 T**	SUPP	6–120	B C-7A	1500	1⅝ 2¼
		Cand. Skirted	Std.	Indicator	**10S11/46**	**.35 T**	SUPP	6–120	B C-7A	1500 78	2 2 11/16
10	S-14	Med.	6	Clear	**10S14**	**.40 T**	SUPP	6–120	C C-6	1000 115	.... 3½
			Std. Sign & Dec.	Clear	**10S14**	**.14 T**	STD	6–120	B C-9	1500 79	2½ 3½
				Inside Frosted	**10S14/IF**	**.14 T**	STD	6–120	B C-9	1500 78	2½ 3½
				Clear Daylight	**10S14/D**	**.30 T**	STD	6–120	B C-9	1500 51	2½ 3½
				Inside Col. Amber-Orange	**10S14/AO**	**.19 T**	STD	6–120	B C-9	1500 ..	.... 3½
				Inside Col. Blue	**10S14/B**	**.19 T**	STD	6–120	B C-9	1500	.... 3½
				Inside Col. Flametint	**10S14/FT**	**.19 T**	SUPP	6–120	B C-9	1500	2½ 3½
				Inside Col. Green	**10S14/G**	**.19 T**	STD	6–120	B C-9	1500	.... 3½
				Inside Col. Ivory	**10S14/V**	**.19 T**	SUPP	6–120	B C-9	1500	2½ 3½
				Inside Col. Red	**10S14/R**	**.19 T**	STD	6–120	B C-9	1500	.... 3½
				Inside Col. White	**10S14/W**	**.19 T**	SUPP	6–120	B C-9	1500	2½ 3½
				Inside Col. Yellow	**10S14/Y**	**.19 T**	STD	6–120	B C-9	1500	.... 3½
			Nat'l Col'd	Amber	**10S14/NA**	**.40 T**	SUPP	6–120	B C-9	1500	.... 3½
				Blue	**10S14/NB**	**.40 T**	SUPP	6–120	B C-9	1500	.... 3½
				Green	**10S14/NG**	**.50 T**	SUPP	6–120	B C-9	1500	.... 3½
				Ruby	**10S14/NR**	**.50 T**	SUPP	6–120	B C-9	1500	.... 3½
15	A-15	Med.	Std.	Inside Frosted	**15A15**	**.11 T**	STD	6–120	B C-9	1200 141	2⅜ 3½
				Clear	**15A15/CL**	**.16 T**	SUPP	6–120	B C-9	1200	2⅜ 3½
				Outside Ctd Blue (1)	**15A15/B**	**.11 T**	SUPP	6–120	B C-9	1200	.... 3½
				Outside Ctd. Green (1)	**15A15/G**	**.11 T**	SUPP	6–120	B C-9	1200	.... 3½
				Outside Ctd. Red (1)	**15A15/R**	**.11 T**	SUPP	6–120	B C-9	1200	.... 3½

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
15	**B-9½**	Cand.	Std.	Clear	**15B9½**	**.40 T**	SUPP	6–60	B C-7A	750	. . 3 5/16
				Outside Ctd. White (1)	**15B9½/W**	**.40 T**	SUPP	6–60	B C-7A	750	. . . . 3 5/16
15	**F-10** *Decorative*	Cand.	Std.	Clear	**15FC**	**.20 T**	SUPP	6–60	B C-7A	750 140	3 1/16
				Outside Ctd. Flametint (1)	**15FC/FT**	**.20 T**	STD	6–60	B C-7A	750	. . . . 3 1/16
				Outside Ctd. Ivory (1)	**15FC/V**	**.20 T**	STD	6–60	B C-7A	750	. . . . 3 1/16
				Outside Ctd. White (1)	**15FC/W**	**.20 T**	STD	6–60	B C-7A	750	. . . . 3 1/16
15	**G-16½**	Cand.	Std.	Clear	**15G16½C**	**.35 T**	SUPP	6–60	B C-7A	750 140	 3
				White	**15G16½C/W**	**.35 T**	SUPP	6–60	B C-7A	750	 3
15	**S-11**	Cand.	Std.	Decorative	**15S11/13**	**.35 T**	SUPP	6–120	B C-7A	750 140	1⅝ 2¼
				Headlamp	**15S11/14**	**.55 T**	SUPP	6–120	B C-5	200 140	1⅜ 2¼
		Med.	115–125	I. F. Refrigerator (2)	**15S11/102**	**.16 T**	SUPP	6–120	B C-7A	400 140	. . . . 2¼
25	**A-19**	Med.	6	Inside Frosted	**25A**	**$0.25 T**	SUPP	6–120	C C-6	1000 350	2½ 3 15/16
			Std.	Inside Frosted	**25A**	**.11 T**	STD	6–120	B C-9	1000 260	2½ 3 15/16
				Clear	**25A/CL**	**.16 T**	SUPP	6–120	B C-9	1000 260	2½ 3 15/16
				Clear Daylight	**25A/D**	**.30 T**	STD	6–120	B C-9	1000 170	2½ 3 15/16
			Std. *Sign & Dec.*	White	**25A/W**	**.16 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Amber-Orange	**25A/AO**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Blue	**25A/B**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Flametint	**25A/FT**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Green	**25A/G**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Ivory	**25A/V**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Old Rose	**25A/RO**	**.19 T**	SUPP	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Red	**25A/R**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Inside Col. Yellow	**25A/Y**	**.19 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Out. Ctd. Amber-Orange (1)	**25A/OAO**	**.16 T**	STD	6–120	B C-9	1000	. . . . 3 15/16
				Outside Ctd. Blue (1)	**25A/OB**	**.16 T**	STD	6–120	B C-9	1000	. . . . 3 15/16

CONTINUED PAGE 52

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
25	A-19 (*CONTINUED*)	Med.	*Sign & Dec.*	Outside Ctd. Flametint (1)	**25A/OFT**	.16 T	STD	6–120	B C-9	1000	.... 3 15/16
				Outside Ctd. Green (1)	**25A/OG**	.16 T	STD	6–120	B C-9	1000	.... 3 15/16
				Outside Ctd. Ivory (1)	**25A/OV**	.16 T	STD	6–120	B C-9	1000	.... 3 15/16
				Outside Ctd. Red (1)	**25A/OR**	.16 T	STD	6–120	B C-9	1000	.. 3 15/16
				Blue	**25A/CB**	.16 T	SUPP	6–120	B C-9	1000	.... 3 15/16
				Green	**25A/CG**	.16 T	SUPP	6–120	B C-9	1000	.... 3 15/16
				Red	**25A/CR**	.16 T	SUPP	6–120	B C-9	1000	.... 3 15/16
			Std. *Nat'l Col'd*	Amber	**25A/NA**	.40 T	SUPP	6–120	B C-9	1000	.... 3 15/16
				Blue	**25A/NB**	.40 T	SUPP	6–120	B C-9	1000	.... 3 15/16
				Green	**25A/NG**	.50 T	SUPP	6–120	B C-9	1000	.... 3 15/16
				Ruby	**25A/NR**	.50 T	SUPP	6–120	B C-9	1000	.... 3 15/16
			High	Inside Frosted	**25A**	.16 T	STD	6–120	B C-17	1000 220	2½ 3 15/16
		Med. *Vibration*	Std.	Inside Frosted	**25A/VS**	.25 T	SUPP	6–120	B C-9	1000 240	2½ 3 15/16
25	F-15 *Decorative*	Med.	Std.	Clear	**25F**	$0.16 T	SUPP	6–120	B C-9	750 260	.... 4½
				Outside Ctd. Flametint (1)	**25F/FT**	.16 T	STD	6–120	B C-9	750	.... 4½
				Outside Ctd. Ivory (1)	**25F/V**	.16 T	STD	6–120	B C-9	750	.... 4½
				Outside Ctd. White (1)	**25F/W**	.16 T	STD	6–120	B C-9	750	.... 4½
25	G-18½ *Decorative*	Med.	Std.	Outside Ctd. Flametint (1)	**25G18½/FT**	.30 T	SUPP	6–120	B C-9	750	.... 3 9/16
				Outside Ctd. Ivory (1)	**25G18½/V**	.30 T	SUPP	6–120	B C-9	750	.... 3 9/16
				Outside Ctd. White (1)	**25G18½/W**	.30 T	STD	6–120	B C-9	750	.... 3 9/16
25	G-25 *Decorative*	Med.	Std.	Clear	**25G25**	.35 T	SUPP	6–60	B C-9	750 260	.... 4 7/16
				Outside Ctd. Flametint (1)	**25G25/FT**	.35 T	SUPP	6–60	B C-9	750	.... 4 7/16
				Outside Ctd. Ivory (1)	**25G25/V**	.35 T	SUPP	6–60	B C-9	750	.... 4 7/16
				Outside Ctd. White (1)	**25G25/W**	.35 T	SUPP	6–60	B C-9	750	.... 4 7/16
25	T-6½	Inter.	Std. *Show-case*	Clear	**25T6½**	.38 T	STD	60	B C-8	1000 240	.... 5½
				Inside Frosted	**25T6½/IF**	.41 T	SUPP	60	B C-8	1000 245	.... 5½

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
25	**T-8**	D.C.Bay.	Std.	Home Appl. (2)	**25T8DC**	.25 T	STD	6–60	B C-1	 230	.... 2⅝
				I. F.—Home Appl. (2)	**25T8DC/IF**	.30 T	SUPP	6–60	B C-1	....	.... 2⅝
25	**T-10**	Med.	Std. *Show-case*	Clear	**25T10**	.27 T	STD	6–60	B C-8	1000 255	.... 5⅝
					25T10/70	.32 T	SUPP	6–60	B S-1	1000 240	.... 5⅝
				All Frosted	**25T10/AF**	.32 T	SUPP	6–60	B C-8	1000	.... 5⅝
				Inside Frosted	**25T10/IF**	.30 T	STD	6–60	B C-8	1000 250	.... 5⅝
				Reflector (3)	**25T10/RFL**	.65 T	STD	6–60	C CC-8	1000 230	.... 5⅝
30	**S-11**	D.C.Bay.	115–125	Film Viewer (4, 7)	**30S11/93**	.38 T	SUPP	6–120	C CC-2V	50 420	1⅝ 2⅜
30	**T-8** *Lumiline*	Disc	Std.	Clear (5)	**L30**	.95 T	STD	6–24	B C-8	1500 250	.... 17¾
				Inside Frosted (5)	**L30/IF**	.95 T	STD	6–24	B C-8	1500 245	.... 17¾
				Moonlight Blue (5)	**L30/MB**	1.05 T	SUPP	6–24	B C-8	1500	.... 17¾
				Emerald (5)	**L30/EM**	1.05 T	SUPP	6–24	B C-8	1500	.... 17¾
				Orange (5)	**L30/O**	1.05 T	SUPP	6–24	B C-8	1500	.... 17¾
				Surprise Pink (5)	**L30/SPK**	1.05 T	SUPP	6–24	B C-8	1500	.... 17¾
				Straw (5)	**L30/ST**	1.05 T	STD	6–24	B C-8	1500	.... 17¾
				White (5)	**L30/W**	1.05 T	STD	6–24	B C-8	1500	.... 17¾
				Red (5)	**L30/R**	1.05 T	SUPP	6–24	B C-8	1500	.... 17¾
30 70 100	**A-21**	3 C. Med.	Std.	I. F. Three-Lite (6)	**30/100**	.27 T	SUPP	6–120	C 2 C-9	750	3¾ 5 1/16
40	**A-15**	Med.	115–125	I.F. (1) Refrigerator	**40A15/1**	$0.12 T	SUPP	6–120	C C-9	1000 465	2¾ 3¾
			Std.	Clear Range Oven	**40A15/22**	.25 T	SUPP	6–120	C C-9	1000 470	2⅞ 4
40	**A-19**	Med.	Std.	Inside Frosted	**40A**	.11 T	STD	6–120	C C-9	1000 465	2⅞ 4¼
				Clear	**40A/CL**	.16 T	SUPP	6–120	C C-9	1000 465	2⅞ 4¼
40	**A-21**	Med.	Std. *Sign & Dec.*	Inside Frosted	**40A21**	.16 T	SUPP	6–120	B C-9	1000 430	2⅞ 4 1/16
				Inside Col. Amber-Orange	**40A/AO**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 1/16
				Inside Col. Blue	**40A/B**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 1/16
				Inside Col. Flametint	**40A/FT**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 1/16

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Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
40	A-21 *(CONTINUED)*	Med	Std. *Sign & Dec.*	Inside Col. Green	**40A/G**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 7/16
				Inside Col. Ivory	**40A/V**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 7/16
				Inside Col. Old Rose	**40A/RO**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 7/16
				Inside Col. Red	**40A/R**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 7/16
				Inside Col. Yellow	**40A/Y**	.21 T	SUPP	6–120	B C-9	1000	2⅞ 4 7/16
			Natural Col'd	Amber	**40A/NA**	.40 T	SUPP	6–120	B C-9	1000	.... 4 7/16
				Blue	**40A/NB**	.40 T	SUPP	6–120	B C-9	1000	.... 4 7/16
				Green	**40A/NG**	.55 T	SUPP	6–120	B C-9	1000	.... 4 7/16
				Ruby	**40A/NR**	.55 T	SUPP	6–120	B C-9	1000	.... 4 7/16
40	**G-25** *Decorative*	Med.	Std.	Outside Ctd. Flametint (3)	**40G/FT**	.35 T	SUPP	6–60	B C-9	750	.... 4 7/16
				Outside Ctd. Ivory (3)	**40G/V**	.35 T	SUPP	6–60	B C-9	750	.... 4 7/16
				Outside Ctd. White (3)	**40G/W**	.35 T	STD	6–60	B C-9	750	.... 4 7/16
40	**T-8**	Med. *Showcase*	Std.	Clear	**40T8**	.95 T	STD	6–24	B C-23	1000 410	.... 11⅞
				All Frosted	**40T8/AF**	1.00 T	SUPP	6-24	B C-23	1000	.... 11⅞
				Inside Frosted	**40T8/IF**	.98 T	SUPP	6–24	B C-23	1000 405	.... 11⅞
		Disc *Lumiline*	Std.	Clear (4)	**L40**	.83 T	STD	6–24	B C-8	1500 350	.... 11¾
				Inside Frosted (4)	**L40/IF**	.83 T	STD	6–24	B C-8	1500 345	.... 11¾
				Moonlight Blue (4)	**L40/MB**	.93 T	SUPP	6–24	B C-8	1500	.... 11¾
				Emerald (4)	**L40/EM**	.93 T	SUPP	6–24	B C-8	1500	.... 11¾
				Orange (4)	**L40/O**	.93 T	SUPP	6–24	B C-8	1500	.... 11¾
				Surprise Pink (4)	**L40/SPK**	.93 T	SUPP	6–24	B C-8	1500	.... 11¾
				Straw (4)	**L40/ST**	.93 T	STD	6–24	B C-8	1500	.... 11¾
				White (4)	**L40/W**	.93 T	STD	6–24	B C-8	1500	.... 11¾
				Red (4)	**L40/R**	.95 T	SUPP	6–24	B C-8	1500	.... 11¾
40	**T-10** *Showcase*	Med.	Std.	Clear	**40T10**	$0.33 T	STD	6–60	B C-8	1000 425	.... 5⅝
				All Frosted	**40T10/AF**	.38 T	SUPP	6–60	B C-8	1000	.... 5⅝
				Reflector (1)	**40T10/RFL**	.65 T	STD	6–60	C CC-8	1000 420	.... 5⅝

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
50	**A-19**	Med.	30	I. F. Rough Serv.	**50A/RS**	**.35 T**	SUPP	6–120	B C-9	1000 505	2½ 3 15/16
			75	I. F. Rough Serv.	**50A19/RS**	**.45 T**	SUPP	6–120	B C-9	1000 500	2½ 3 15/16
			Std.	Inside Frosted	**50A**	**.11 T**	STD	6–120	C CC-6	1000 660	3⅛ 4 7/16
				Clear	**50A/CL**	**.16 T**	SUPP	6–120	C CC-6	1000 660	3⅛ 4 7/16
				I. F. Rough Serv.	**50A/RS**	**.25 T**	STD	6–120	B C-22	1000 455	2½ 3 15/16
				Clear Bake Oven	**50A19/31**	**.40 T**	SUPP	6–120	B C-9	1000 520	2½ 3 15/16
			High	Inside Frosted	**50A**	**.16 T**	STD	6–120	B C-17	1000 480	2½ 3 15/16
				I. F. Rough Serv.	**50A/RS**	**.32 T**	SUPP	6–120	B C-22	1000 435	2½ 3 15/16
				Clear	**50A19/37**	**.21 T**	SUPP	6–120	B C-17	1000 485	2½ 3 15/16
				Clear Bake Oven	**50A19/38**	**.45 T**	SUPP	6–120	B C-17	1000 480	2½ 3 15/16
			275	I. F.—Mine	**50A19**	**.27 T**	SUPP	6–120	B C-17	1000 460	2½ 3 15/16
				Cl.—Mine	**50A19/35**	**.32 T**	SUPP	6–120	B C-17	1000 460	2½ 3 15/16
			300	I. F.—Mine	**50A19**	**.27 T**	SUPP	6–120	B C-17	1000 460	2½ 3 15/16
				Cl.—Mine	**50A19/36**	**.32 T**	SUPP	6–120	B C-17	1000 460	2½ 3 15/16
		Med. Vibration	Std.	Inside Frosted (2)	**50A/VS**	**.20 T**	STD	6–120	B C-9	1000 555	2½ 3 15/16
50 50	**P-25**	3 C. Mog.	Std.	Marine Run. Lt. (3)	**50/50P25/28**	**2.40 T**	SUPP	60	C C-5,C-9	750 375	3 5/16 5 1/16
50 100 150	**PS-25**	3 C. Med	Std.	I. F. Three-Lite (4)	**50/150M**	**.33 T**	STD	60	C 2 C-9	750	3⅞ 5 15/16
		3 C. Mog.	Std.	I. F. Three-Lite (5)	**50/150**	**.44 T**	STD	60	C 2 C-9	1000	5 6 13/16
60	**A-19**	Med.	Std.	Inside Frosted	**60A**	**$0.11 T**	STD	6–120	C CC-6	1000 835	3⅛ 4 7/16
				Clear	**60A/CL**	**.16 T**	SUPP	6–120	C CC-6	1000 835	3⅛ 4 7/16
				I. F. Daylight	**60A/D**	**.25 T**	STD	6–120	C CC-6	1000 540	3⅛ 4 7/16
				Clear Daylight	**60A/DCL**	**.30 T**	SUPP	6–120	C CC-6	1000 540	3⅛ 4 7/16
				I. F. Silv. Bowl	**60A/SB**	**.24 T**	STD	6–120	C CC-6	1000	3⅛ 4 7/16
				White	**60A/W**	**.16 T**	STD	6–120	C CC-6	1000	... 4 7/16
60	**A-21**	Med.	Std.	Out. Ctd.(1) Amber orange	**60A21/AO**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Blue (1)	**60A21/B**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16

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Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
60	A-21 *(CONTINUED)*	Med.	Std.	Outside Ctd. Flametint (1)	**60A21/FT**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Green (1)	**60A21/G**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Ivory (1)	**60A21/V**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Old Rose (1)	**60A21/RO**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Red (1)	**60A21/R**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
				Outside Ctd. Yellow (1)	**60A21/Y**	**.25 T**	SUPP	6–120	C C-9	1000	3⅜ 4 15/16
			Nat'l Col'd	Amber	**60A21/NA**	**.45 T**	SUPP	6–120	C C-9	1000	.... 4 15/16
				Blue	**60A21/NB**	**.45 T**	SUPP	6–120	C C-9	1000	.... 4 15/16
				Green	**60A21/NG**	**.60 T**	SUPP	6–120	C C-9	1000	.... 4 15/16
				Ruby	**60A21/NR**	**.60 T**	SUPP	6–120	C C-9	1000	.... 4 15/16
60	T-8 *Lumiline*	Disc	Std.	Clear (3)	**L60**	**.95 T**	STD	6–24	B C-8	1500 560	.... 17¾
				Inside Frosted (3)	**L60/IF**	**.95 T**	STD	6–24	B C-8	1500 550	.... 17¾
				Moonlight Blue (3)	**L60/MB**	**1.05 T**	SUPP	6–24	B C-8	1500	.... 17¾
				Emerald (3)	**L60/EM**	**1.05 T**	SUPP	6–24	B C-8	1500	.... 17¾
				Orange (3)	**L60/O**	**1.05 T**	SUPP	6–24	B C-8	1500	.... 17¾
				Surprise Pink (3)	**L60/SPK**	**1.05 T**	SUPP	6–24	B C-8	1500	.... 17¾
				Straw (3)	**L60/ST**	**1.05 T**	STD	6–24	B C-8	1500	.... 17¾
				White (3)	**L60/W**	**1.05 T**	STD	6–24	B C-8	1500	.... 17¾
75	A-21	Med.	Std.	Inside Frosted	**75A**	**.15 T**	STD	6–120	C C-9	750 1120	3⅞ 5 5/16
				Clear	**75A/CL**	**.20 T**	SUPP	6–120	C C-9	750 1120	3⅞ 5 5/16
75	A-23	Med.	Std.	I. F. Daylight	**75A23/D**	**$0.30 T**	SUPP	6–120	C C-9	750 725	4⅜ 6 1/16
100	A-21	Med.	Std.	Inside Frosted	**100A**	**.15 T**	STD	6–120	C CC-6	750 1630	3⅞ 5 5/16
				Clear	**100A/CL**	**.20 T**	SUPP	6–120	C CC-6	750 1620	3⅞ 5 5/16
				Spotlight (3)	**100A21/SP**	**.80 T**	STD	6–120	C C-5	200 1360	3 4 7/16
				Spotlight (6)	**100A21/ISP**	**1.30 T**	SUPP	6–120	C C-5	200 1330	3 4 7/16
100	A-23	Med.	Std.	I. F. Daylight	**100A/D**	**.25 T**	STD	6–120	C CC-6	750 1060	4⅜ 6 1/16
				Clear Daylight	**100A/DCL**	**.30 T**	SUPP	6–120	C CC-6	750 1060	4⅜ 6 1/16

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Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
100	A-23 (CONTINUED)	Med.	Std.	I. F. Silv. Bowl	**100A/SB**	**.28 T**	STD	6–120	C CC-6	750	4⅜ 6 1/16
				I. F. Rough Serv.	**100A/RS**	**.35 T**	STD	6–120	C C-17	1000 1200	4⅜ 6 1/16
				Clear Bake Oven	**100A23/20**	**.60 T**	SUPP	6–120	C CC-6	1000 1500	4⅜ 6 1/16
				I. F. Vibration (4)	**100A23/28**	**.35 T**	STD	6–120	C C-9	1000 1300	4⅜ 6 1/16
100	**G-16½** (Base Down to Horizontal)	S.C.Bay.	Std.	Spotlight (5)	100G16½/29SC	**.90 T**	SUPP	6–60	C CC-13	200 1600	1⅜ 3
		D.C.Bay.	Std.	Spotlight (5)	100G16½/29DC	**.90 T**	SUPP	6–60	C CC-13	200 1600	1⅜ 3
		D.C. Pf.	Std.	Spotlight	**100G16½/30**	**1.00 T**	SUPP	6–60	C CC-13	200 1600	1¼ 3
100	**S-11**	S.C.Bay.	115–125	Toy Projector (5, 7, 8)	**100S11SC**	**.38 T**	SUPP	6–120	C CC-2V	25 2050	1⅜ 2⅜
100	**T-8** (Base Down)	S.C.Bay.	Std.	Projection(5)	**100T8SC**	**.85 T**	SUPP	24	C CC-13	50 1920	1⅜ 3⅛
					100T8/108SC	**.55 T**	STD	24	C CC-2V	50 1950	1⅜ 3⅛
100 200 300	**G-30**	3 C. Mog.	Std.	I. F. Indirect Three-Lite (3)	**100/300**	**.55 T**	STD	60	C 2C-2R	1000	3¾ 6¾
120	**A-21**	Med.	115–125	Toy Projector (4)	**120A21/49**	**.15 T**	SUPP	120	C C-9	25 2700	3⅜ 4 15/16
125	**R-40**	Md. Skt.	115–125	Refl. Infrared (4, 14) Lt. I. F. Indust.	**125R40**	**1.15 N**	SUPP	24	C C-9	....	.... 7¼
140	**T-10**	Med.	115–125	Toy Projector (1.4)	**140T10/69**	**.25 T**	SUPP	60	C C-9	25 3350	3⅜ 5⅛
150	**PAR-38** *Projector ★*	Md. Skt.	Std.	Spot (5, 6)	**150PAR/SP**	**1.55 T**	STD	12	C CC-6	1000	.... 5 5/16
				Flood (5, 6)	**150PAR/FL**	**1.55 T**	STD	12	C CC-6	1000	.... 5 5/16
		Side Prong	Std.	Compact Spot (7)	**150PAR/3SP**	**1.80 T**	SUPP	12	C CC-6	1000	.... 4 3/16
				Compact Flood (7)	**150PAR/3FL**	**1.80 T**	SUPP	12	C CC-6	1000	.... 4 3/16
150	**PS-25**	Med.	Std.	Inside Frosted	**150**	**.20 T**	STD	60	C C-9	750 2600	5¼ 6 11/16
				Clear	**150/CL**	**.20 T**	STD	60	C C-9	750 2600	5¼ 6 11/16
				Inside White Bowl	**150/WB**	**.25 T**	STD	60	C C-9	750	5¼ 6 11/16
				Clear Daylight	**150/DCL**	**.40 T**	STD	60	C C-9	1000 1600	5¼ 6 11/16
				I. F. Daylight	**150/D**	**.45 T**	STD	60	C C-9	1000 1600	5¼ 6 11/16
				I. F. Silv. Bowl (8)	**150/SB**	**.45 T**	STD	60	C C-9	1000	5¼ 6 11/16
				I. F. Rough Serv.	**150/RS**	**.55 T**	SUPP	60	C C-17	1000 2050	5¼ 6 11/16
150	**R-40** *Reflector*	Med.	Std.	Spot Light I. F. (16, 9)	**150R/SP**	**1.05 T**	STD	24	C C-11	1000	.... 6½
				Flood I. F. (16, 9)	**150R/FL**	**1.05 T**	STD	24	C C-11	1000	.... 6½

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
150	**T-8** (Base Down)	S.C.Bay.	Std.	Projection (10)	**150T8/70**	**1.30 T**	STD	24	C 2 CC-8	25 3300	1 3/8 3 5/8
		D.C.Bay.	Std.	Projection (10)	**150T8/79**	**1.40 T**	SUPP	24	C 2 CC-8	25 3300	1 3/8 3 5/8
150 150	**G-30**	3 C. Mog.	Std.	Hospital Spotlight (1, 11)	**150/150G30/32**	**3.10 T**	SUPP	60	C C-5,C-9	....	3 3/8 5 9/16
200	**PS-30**	Med.	Std.	Clear	**200**	**.27 T**	STD	60	C C-9	750 3700	6 8 1/16
				Inside Frosted	**200/IF**	**.27 T**	STD	60	C C-9	750 3700	6 8 1/16
				Inside White Bowl	**200/WB**	**.32 T**	STD	60	C C-9	750	6 8 1/16
				Clear Daylight	**200/D**	**.70 T**	STD	60	C C-9	1000 2350	6 8 1/16
				I. F. Daylight	**200/DIF**	**.75 T**	STD	60	C C-9	1000 2350	6 8 1/16
				I. F. Silv. Bowl (8)	**200/SBIF**	**.67 T**	STD	60	C C-9	1000	6 8 1/16
				Clear Rough Serv.	**200PS30/24**	**.80 T**	SUPP	60	C C-9	1000 3200	6 8 1/16
				I. F. Rough Serv.	**200PS30/23**	**.80 T**	SUPP	60	C C-9	1000 3200	6 8 1/16
200	**T-8**	S.C.Bay.	Std.	Projection (1, 2, 3)	**200T8SC**	**1.40 T**	SUPP	24	C 2 CC-8	25 4700	1 3/8 3 5/8
200	**T-10★** (Base Down)	Med.	Std.	Projection	**200T10**	**2.15 T**	SUPP	24	C CC-13	50 4250	3 5 1/2
		Med. Pf.	Std.	Projection	**200T10P**	**2.15 T**	SUPP	24	C CC-13	50 4250	2 1/16 5 3/4
250	**A-21**	Med.	115–125	Black Light Purple X(5,6)	**250A21/60**	**1.25 N**	SUPP	6–120	C C-9	50	3 3/8 4 11/16
250	**G-30**	Med.	Std.	Spotlight (7)	**250G/SP**	**1.15 T**	STD	24	C C-5	200 4400	3 5 1/8
				Floodlight (7)	**250G/FL**	**1.15 T**	STD	24	C C-5	800 3750	3 5 1/8
				I. F. Ind.–Lite (2)	**250G30IL**	**.70 T**	SUPP	60	C C-7A	500 4600	3 1/2 6 1/2
250	**G-30**	Md. Skt.	115–125	Infrared Industrial (6, 8, 9, 10)	**250G30**	**.80 N**	STD	60	C C-7A	....	.... 7 1/8
250	**R-40**	Md. Skt.	115–125	Light I. F. Refl. Infrared Industrial (6, 8, 9, 10)	**250R40/4**	**1.25 N**	STD	24	C C-9	....	.... 7 1/4
		Med.	115–125	Light I. F. Refl. Infrared Heat (6, 9, 10)	**250R40/1**	**1.10 N**	STD	24	C C-9	....	.... 6 1/2
				Light I. F. Refl. Infrared 2000 °K(6,9,10)	**250R40/9**	**1.70 N**	STD	24	C CC-9	....	.... 6 1/2
				Refl. Infrared Heat Red Bowl ★(6, 9, 10)	**250R40/10**	**2.95 N**	STD	24	C C-9	....	.... 6 7/8
250	**T-14**	Med. Pf.	Std.	Projection	**250T14/2**	**2.00 T**	SUPP	24	C C-13	50 5600	2 3/16 5 1/4

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
300	**PS-30**	Med.	Std.	Clear	**300M**	**.40 T**	STD	24	C C-9	750 5900	6 8 1/16
				Inside Frosted	**300M/IF**	**.45 T**	STD	24	C C-9	750 5900	6 8 1/16
300	**PS-35**	Med.	Std.	Inside White Bowl	**300M/WB**	**.50 T**	SUPP	24	C C-9	750	6 8¾
		Md. Skt. 1½" dia. skirt	Std.	Clear	**300MS**	**.65 T**	SUPP	24	C C-9	1000 5650	7½ 9⅞
				Inside Frosted	**300MS/IF**	**.70 T**	SUPP	24	C C-9	1000 5650	7½ 9⅞
				Inside White Bowl	**300MS/WB**	**.70 T**	SUPP	24	C C-9	1000	7½ 9⅞
				Clear Daylight	**300MS/D**	**1.10 T**	SUPP	24	C C-9	1000 3650	7½ 9⅞
				I. F. Silv. Bowl (12)	300MS/SBIF	**1.20 T**	SUPP	24	C C-9	1000	7½ 9⅞
300 (Continued)	**PS-35**	Mog.	Std.	Clear	**300**	**$0.65 T**	STD	24	C C-9	1000 5650	7 9⅜
				Inside Frosted	**300/IF**	**.70 T**	STD	24	C C-9	1000 5650	7 9⅜
				Inside White Bowl	**300/WB**	**.70 T**	STD	24	C C-9	1000	7 9⅜
				Clear Daylight	**300/D**	**1.10 T**	STD	24	C C-9	1000 3650	7 9⅜
				I. F. Daylight	**300/DIF**	**1.20 T**	SUPP	24	C C-9	1000 3650	7 9⅜
				I. F. Silv. Bowl (1)	**300/SBIF**	**1.20 T**	STD	24	C C-9	1000	7 9⅜
300 *Reflector*	**R-40**	Med.	Std.	Spot Light I. F. (2, 14)	**300R/SP**	**1.55 T**	STD	24	C CC-2V Horiz.	1000	.... 6½
				Flood I. F. (2, 14)	**300R/FL**	**1.55 T**	STD	24	C CC-2V Horiz.	1000	.... 6½
				Flood ★ I. F. (6)	**300R/FL/1**	**2.95 T**	SUPP	24	C CC-2V Horiz.	1000	.... 6½
300	**T-8½**	S.C.Bay.	Std.	Projection (3, 4)	**300T8½/1SC**	**2.40 T**	SUPP	24	C C-13D	25	1⅜ 4⅛
				Projection (3, 4)	**300T8½/10**	**2.25 T**	SUPP	24	C 2CC-8	25 7200	1⅜ 4⅛
300	**T-10★**	Med. Pf.	Std.	Projection (4, 5)	**300T10P**	**2.70 T**	STD	24	C 2 CC-8	25	2 1/16 5¾
375	**G-30**	Md. Skt.	115–125	Infrared Industrial (8, 9, 10)	**375G30**	**1.05 N**	SUPP	60	C C-7A	....	5 7⅛
375	**R-40**	Md. Skt.	115–125	Light I. F. Refl. Infrared Indust. (6, 8, 9, 10, 14)	**375R40**	**1.50 N**	STD	24	C C-9	....	.... 7¼
400 (Base Down to Horizontal)	**G-30**	Med.	Std.	Spotlight	**400G/SP**	**1.75 T**	STD	24	C C-5	200 8000	3 5⅛
				Floodlight	**400G/FL**	**2.00 T**	SUPP	24	C C-5	800 6600	3 5⅛
500	**G-40**	Mog.	Std.	Floodlight (12)	**500G/FL**	**2.10 T**	STD	12	C C-5	800 8800	4¼ 7 1/16

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
500	**PS-25**	Med.	Std.	I. F.—3200°K (13)	**500PS25/5**	**.70 P**	SUPP	24	C C-9	60 13000	5¼ 6 11/16
500	**PS-40**	Mog.	Std.	Clear	**500**	**.95 T**	STD	24	C C-7A	1000 9950	7 9¾
				Inside Frosted	**500/IF**	**1.00 T**	STD	24	C C-7A	1000 9950	7 9¾
				Inside White Bowl	**500/WB**	**1.00 T**	STD	24	C C-7A	1000	7 9¾
				Clear Daylight	**500/D**	**1.85 T**	STD	24	C C-7A	1000 6450	7 9¾
				I. F. Daylight	**500/DIF**	**1.95 T**	SUPP	24	C C-7A	1000 6400	7 9¾
				I. F. Silv. Bowl (1)	**500/SBIF**	**1.70 T**	STD	24	C C-7A	1000	7 9¾
500	**T-10★**	Med. Pf.	Std.	Projection (1, 2)	**500T10P**	**$3.50 T**	STD	24	C C-13D	25	2 1/16 5¾
500	**T-20★**	Med.	Std	Projection	**500T20**	**2.20 T**	SUPP	6	C C-13	50 13200	3 5½
500	**T-20**	Md. Bip.	Std.	Inside Frost ★ (Base Up)	**500T20/50**	**2.25 T**	SUPP	12	C C-13	1000 9300	4 6½
		Med. Pf.	Std.	Projection ★ (1)	**500T20P**	**2.20 T**	STD	6	C C-13	50 13200	2 1/16 5¾
				Display Spot-light ★ (3)	**500T20/64**	**3.00 T**	SUPP	12	C C-13	500 9500	2 1/16 5¾
				3200°K ★ (1, 4)	**500T20/57**	**3.00 P**	SUPP	12	C C-13	30 13000	2 1/16 5¾
500	**T-40★**	Md. Bip.	115–125	Infrared Dry Triang. Fil. (5, 6, 7)	**500T40/3**	**5.50 N**	SUPP	12	C	....	3½ 7¼
750	**PS-52**	Mog.	Std.	Clear	**750**	**2.90 T**	STD	6	C C-7A	1000 15500	9½ 13 1/16
				Inside Frosted	**750/IF**	**3.05 T**	STD	6	C C-7A	1000 15500	9½ 13 1/16
				Inside White Bowl	**750/WB**	**3.05 T**	SUPP	6	C C-7A	1000	9½ 13 1/16
				I. F. Silv. Bowl (9)	**750/SBIF**	**4.75 T**	SUPP	6	C C-7A	1000	9½ 13 1/16
750	**T-12★** (Base Down)	Med. Pf.	Std.	Projection(2)	**750T12P**	**4.10 T**	STD	24	C C-13D	25	2 1/16 5¾
					750T12/24	**4.10 T**	SUPP	24	C C-13D	10	2 1/16 5¾
					750T12/34	**4.75 T**	SUPP	24	C C-13D	200	2 1/16 5¾
750	**T-24★**	Md. Bip.	Std.	Inside Frosted (Base Up)	**750T24**	**3.50 T**	SUPP	12	C C-13	1000 14000	5½ 9⅛
				3200°K (1, 2, 4, 6)	**750T24/16**	**5.00 P**	SUPP	12	C C-13	30 20500	2½ 6½
900 *Motion Picture*	**T-20★**	Mog.	30	Projection(1)	**900T20**	**6.25 T**	SUPP	12	C C-13	100 23500	4¾ 9 1/16
1000	**G-40★**	Mog.	Std.	Spotlight(3)	**1M/G40SP4½**	**5.00 T**	STD	12	C C-5	200 22500	4¼ 7 1/16
					1M/G40SP5½	**5.00 T**	SUPP	12	C C-5	200 22500	5¼ 8

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Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std. or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
1000	G-40★ (CONTINUED)	Mog.	Std.	Floodlight(3)	1M/G40FL	5.00 T	STD	12	C C-5	800 19500	5¼ 8
		Mog. Pf.	Std.	Spotlight (3)	1M/G40PSP	5.40 T	SUPP	12	C C-5	200 22500	3 11/16 8 7/16
1000	PS-52	Mog.	Std.	Clear	1000	$3.10 T	STD	6	C C-7A	1000 21500	9½ 13 1/16
				Inside Frosted	1000/IF	3.30 T	STD	6	C C-7A	1000 21500	9½ 13 1/16
				Inside White Bowl	1000/WB	3.30 T	SUPP	6	C C-7A	1000	9½ 13 1/16
				I. F. Silv. Bowl (1)	1000/SBIF	5.00 T	SUPP	6	C C-7A	1000	9½ 13 1/16
				3200°K (2)	1M/PS52/77	4.00 P	SUPP	6	C C-7A	75 26000	9½ 13 1/16
1000	T-12★	Med. Pf.	Std.	Projection (3, 4)	1M/T12P	6.00 T	STD	24	C C-13D	10	2 7/16 5¾
1000	T-20★ (Base Down)	Med. Pf.	Std.	Projection(3)	1M/T20MP	4.50 T	SUPP	12	C C-13D	25 28000	2 7/16 5¾
		Mog.	Std.	Projection	1M/T20	4.75 T	SUPP	12	C C-13	50 28000	4¾ 9 1/16
		Mog. Pf.	Std.	Projection	1M/T20P	4.75 T	STD	12	C C-13	50 28000	3 7/16 9½
					1M/T20/40	6.25 T	SUPP	12	C C-13D	25 28000	3 7/16 9½
				3200°K (2)	1M/T20/59	6.15 P	SUPP	12	C C-13	35 27500	3 7/16 9½
1000	T-24★	Md. Bip.	Std.	Inside Frosted (5)	1M/T24	3.75 T	SUPP	12	C C-13	1000 19500	5½ 9⅛
1000	T-40★	Md. Bip.	115–125	Infrared Drying-Triang. Fil. (6, 7, 8)	1M/T40/3	7.00 N	SUPP	12	C	....	3½ 7¼
1500	G-48★	Mog.	Std.	Floodlight(1)	1500G48/6	9.25 T	SUPP	6	C C-5	800 30000	5¼ 8⅝
1500	PS-52	Mog.	Std.	Clear	1500	4.75 T	STD	6	C C-7A	1000 33000	9½ 13 1/16
				Inside Frosted	1500/IF	5.00 T	SUPP	6	C C-7A	1000 33000	9½ 13 1/16
				3200°K (2)	1500PS52/78	5.50 P	SUPP	6	C C-7A	100 40000	9½ 13 1/16
			High	Clear	1500	6.00 T	SUPP	6	C C-7A	1000 28500	9½ 13 1/16
2000	G-48★	Mg. Bip.	Std.	Spotlight (9)	2M/G48/17	11.00 T	SUPP	6	C C-13	200 52000	5 9⅜
2000	T-30★	Mg. Bip.	Std.	Spotlight (5)	2M/T30/1	15.25 T	SUPP	6	C C-13D	200 48000	6½ 10
5000	T-64★	Mg. Bip.	Std.	Mot. Pict. (10) Col. Photo.; 3350°K (2); Airport Floodlight (9)	5M/T64/1	23.00 P	STD	1	C C-13	75 164000	6½ 13⅜
10M	G-96★	Mg. Bip.	Std.	Mot. Pict., (10) Col. Photo.; 3350°K (2); Airport Floodlight (9)	10M/G96/2	65.00P	STD	1	C C-13	75 325000	10 17⅜

LAMPS LISTED BY VOLTS AND AMPERES

Volts (1)	Bulb (2)	Amps. (3)	Base (4)	Description (See Footnote Number) (5)	Lamp Ordering Abbreviation (Except Volts) (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Class and Fil. (10)	Hours Life and Approx. Lumens (11)	L.C.L. and M.O.L. (12)
4	**S-8**	.75	S.C.Bay.	Sound Reproducer (1)	**75A/S8SC**	**$0.45 N**	SUPP	10–100	C C-6	50 32	1¼ 2
			S. C. Pf.	Sound Reproducer (1)	**75A/S8SCP**	**.55 N**	SUPP	10–100	C C-6	50 32	1⅛ 2
			D. C. Pf.	Sound Reproducer (1)	**75A/S8DCP**	**.55 N**	SUPP	10–100	C C-6	50 32	1⅛ 2
5	**T-8**	6.5	S. C. Pf.	Sound Reproducer (2)	**6.5A/T8SCP**	**.90 N**	SUPP	6–24	C C-8	50 580	1⅝ 3⅛
6	**T-5**	1	S. C. Pf.	Sound Reproducer (3)	**1A/T5/7**	**.85 N**	SUPP	10–100	C C-8	100 70	1⅛ 2⅜
7	**T-5**	.20	S. C. Pf.	Sound Reproducer	**20A/T5SCP**	**.75 N**	SUPP	10–100	B C-8	50 15	1⅛ 2⅜
8 (Base Down)	**T-8**	2	S.C.Bay.	Sound Reproducer (4, 5)	**2A/T8SC**	**.60 N**	SUPP	6–24	C C-6	 160	1¾ 3⅛
			S. C. Pf.	Sound Reproducer	**2A/T8SCP**	**.70 N**	SUPP	6–24	C C-6	 160	1⅝ 3⅛
8.5	**T-8**	4	S.C.Bay.	Sound Reproducer (4, 6)	**4A/T8/25**	**.60 N**	SUPP	6–24	C C-6	100 680	1¾ 3⅛
				Sound Reproducer (7)	**4A/T8/34**	**.80 N**	SUPP	6–24	C C-8	100 680	1¾ 3⅛
9	**T-8**	4	S. C. Pf.	Sound Reproducer (2)	**4A/T8SCP**	**.85 N**	SUPP	6–24	C C-6	500 580	1 13/32 3⅛
10 (Base Down)	**T-8**	5	S.C.Bay.	Sound Reproducer (8, 9)	**5A/T8SC**	**.60 N**	SUPP	6–24	C C-6	100 1000	1 13/32 3⅛
			S. C. Pf.	Sound Reproducer	**5A/T8SCP**	**.70 N**	SUPP	6–24	C C-6	100 1000	1 13/32 3⅛
		7.5	S.C.Bay.	Sound Reproducer (4, 8, 10)	**7.5A/T8SC**	**.60 N**	SUPP	6–24	C C-6	100 1600	1 13/32 3⅛
			S. C. Pf.	Sound Reproducer	**7.5A/T8SCP**	**.70 N**	SUPP	6–24	C C-6	100 1600	1 13/32 3⅛
18	**T-4**	.11	Cand.	Switchboard G. E.	**11A/T4C**	**.30 T**	SUPP	10–100	B C-2V	2000 10	13/16 1½
27	**T-8**	1	S.C.Bay.	Sound Reproducer (2, 11)	**1A/T8SC**	**.75 N**	SUPP	6–24	C CC-6	100 500	1 13/32 3⅛

SUNLAMPS

Watts (1)	Bulb (2)	Base (3)	Volts (4)	Description (See Footnote Number) (5)	Lamp Ordering Number (6)	List Price and Tax Symbol (7)	Std., or Supp. (8)	Ctn., Std. Pkg. Qty. (9)	Hours Life (10)	M.O.L. (11)
100	**A-21★**	Admed.	....	Clear (7)	**S-4**	**$11.00 N**	STD	6	......	5¼
400	**PS-22★**	Mog.	....	Inside Frosted	**S-1**	**4.75 N**	STD	6	400	6 1/16
275	**R-40★**	Med.	115–125	Refl. Sun.—I. F. (7, 8)	**RS**	**9.95 N**	STD	6	......	7

F LAMPS (FLUORESCENT)

Watts (1)	Bulb (2)	Base (3)	Description (See Footnote Number) (4)	Lamp Ordering Abbreviation (5)	List Price and Tax Symbol (6)	Std., or Supp. (7)	Ctn., Std. Pkg. Qty. (8)	Hours Life (1) (9)	Approx. Lumens (10)
6	T-5 9″ ⅝″ Diameter	Min. Bipin	Daylight	**F6T5/D**	**$0.75 T**	STD	24	2500	186
			White (2)	**F6T5/W**	**.75 T**	STD	24	2500	210
			White (4)	**F6T5/45W**	**.75 T**	STD	24	2500	198
8	T-5 12″ ⅝″ Diameter	Min. Bipin	Daylight	**F8T5/D**	**.85 T**	STD	24	2500	295
			White (2)	**F8T5/W**	**.85 T**	STD	24	2500	330
			White (4)	**F8T5/45W**	**.85 T**	STD	24	2500	310
13	T-5 21″ ⅝″ Diameter	Min. Bipin	Daylight	**F13T5/D**	**.95 T**	SUPP	24	2500	490
			White (2)	**F13T5/W**	**.95 T**	SUPP	24	2500	580
			White (4)	**F13T5/45W**	**.95 T**	STD	24	2500	545
14	T-12 15″ 1½″ Diameter	Med. Bipin	Daylight	**F14T12/D**	**.75 T**	SUPP	24	2500	435
			White (2)	**F14T12/W**	**.75 T**	STD	24	2500	490
			Soft White	**F14T12/SW**	**.85 T**	SUPP	24	2500	......
			White (4)	**F14T12/45W**	**.75 T**	STD	24	2500	460
			White (5)	**F14T12/W/1**	**.75 T**	SUPP	24	1600	485
15	T-8 18″ 1″ Diameter	Med. Bipin	Blue (3)	**F15T8/B**	**.77 T**	STD	24	...	......
			Daylight (3)	**F15T8/D**	**.62 T**	STD	24	....	585
			Gold (3)	**F15T8/GO**	**.87 T**	STD	24	....	......
			Green (3)	**F15T8/G**	**.77 T**	STD	24	....	......
			Pink (3)	**F15T8/PK**	**.77 T**	STD	24	....	......
			Red (3)	**F15T8/R**	**.87 T**	STD	24	....	......
			White (2, 3)	**F15T8/W**	**.62 T**	STD	24	....	615
			Soft White (3)	**F15T8/SW**	**.72 T**	STD	24	....	480
			White (3, 4)	**F15T8/45W**	**.62 T**	STD	24	....	600
15	T-12 18″ 1½″ Diameter	Med. Bipin	Daylight (3)	**F15T12/D**	**.75 T**	STD	24	....	540
			Gold	**F15T12/GO**	**1.00 T**	SUPP	24	2500	......
			Pink	**F15T12/PK**	**.90 T**	SUPP	24	2500	......
			White (3, 4)	**F15T12/45W**	**.75 T**	STD	24	....	570

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F LAMPS (FLUORESCENT) (Continued)

Watts (1)	Bulb (2)	Base (3)	Description (See Footnote Number) (4)	Lamp Ordering Abbreviation (5)	List Price and Tax Symbol (6)	Std., or Supp. (7)	Ctn., Std. Pkg. Qty. (8)	Hours Life (9)	Approx. Lumens (10)
15	T-12 18" 1½" Diameter	Med. Bipin	White (2, 3)	**F15T12/W**	**.75 T**	STD	24	....	600
			Soft White (3)	**F15T12/SW**	**.85 T**	STD	24	....	465
20	**T-12 24"** **1½" Diameter**	**Med. Bipin**	Blue (3)	**F20T12/B**	**.90 T**	STD	24	....	. ...
			Daylight (3)	**F20T12/D**	**.75 T**	STD	24	....	800
			Gold (3)	**F20T12/GO**	**1.00 T**	STD	24	....	...
			Green (3)	**F20T12/G**	**.90 T**	STD	24	....	
			Pink (3)	**F20T12/PK**	**.90 T**	STD	24	....	
			Red (3)	**F20T12/R**	**1.00 T**	STD	24	....	......
			White (2, 3)	**F20T12/W**	**.75 T**	STD	24	....	920
			Soft White (3)	**F20T12/SW**	**.85 T**	STD	24	....	700
			White (3, 4)	**F20T12/45W**	**.75 T**	STD	24	....	860
30	**T-8 36"** **1" Diameter**	**Med. Bipin**	Blue (1, 8)	**F30T8/B**	**$0.90 T**	STD	24	....	.... .
			Daylight (1, 8)	**F30T8/D**	**.75 T**	STD	24	....	1350
			Gold (1, 8)	**F30T8/GO**	**1.00 T**	STD	24	....	......
			Green (1, 8)	**F30T8/G**	**.90 T**	STD	24	....	......
			Pink (1, 8)	**F30T8/PK**	**.90 T**	STD	24	....	......
			Red (1, 8)	**F30T8/R**	**1.00 T**	STD	24	....	......
			White (1, 2, 8)	**F30T8/W**	**.75 T**	STD	24	....	1470
			Soft White (1, 8)	**F30T8/SW**	**.85 T**	STD	24	....	1170
			White (1, 8, 10)	**F30T8/45W**	**.75 T**	STD	24	....	1380
40	**T-12 48"** **1½" Diameter**	**Med. Bipin**	Blue (1, 8)	**F40T12/B**	**1.25 T**	STD	24	....	......
			Daylight (1, 8)	**F40T12/D**	**1.00 T**	STD	24	....	1920
			Daylight (7, 8)	F40T12/D/IS	**1.00 T**	SUPP	24	....	......
			Daylight (5, 7, 8)	F40T12/D/IS/H	**1.20 T**	SUPP	24	....	......
			Gold (1, 8)	**F40T12/GO**	**1.35 T**	STD	24	....	......
			Green (1, 8)	**F40T12/G**	**1.25 T**	STD	24	....	......
			Pink (1, 8)	**F40T12/PK**	**1.25 T**	STD	24	..	.....

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F LAMPS (FLUORESCENT) (Continued)

Watts (1)	Bulb (2)	Base (3)	Description (See Footnote Number) (4)	Lamp Ordering Abbreviation (5)	List Price and Tax Symbol (6)	Std. or Supp. (7)	Ctn., Std. Pkg. Qty. (8)	Hours Life (9)	Approx. Lumens (10)
40	T-12 48" 1½" Diameter	Med. Bipin	Red (1, 8)	F40T12/R	1.35 T	STD	24	....	......
			White (1, 2, 8)	F40T12/W	1.00 T	STD	24	....	2300
			White (2, 7, 8)	F40T12/W/IS	1.00 T	SUPP	24	....	2300
			White (5, 7, 8)	F40T12/W/IS/H	1.20 T	SUPP	24	....	......
			White (1, 2, 6)	F40T12/W/LT	1.10 T	SUPP	24	1500	......
			White (1, 2, 8)	F40T12/45W	1.00 T	STD	24	....	2100
			White (5, 7, 8)	F40T12/45W/IS/H	1.20 T	STD	24	....	2100
			Soft White (1, 2, 8)	F40T12/SW	1.15 T	STD	24	....	1720
40	T-17 60"	Mog. Bipin	White (5, 6, 7, 10)	F40T17/45W/IS/H	2.30 T	SUPP	12	2500	....
85	T-10 (Type RF)	3 and 2 Prong	Blue White (4, 6)	F85T10/BW	3.00 T	SUPP	12	3000	4000
			Industrial White (4, 6)	F85T10/IW	3.00 T	SUPP	12	3000	4000
100	T-17 60" 2⅛" Diameter	Mog. Bipin	Daylight (1, 8, 9)	F100T17/D	2.30 T	STD	12	....	3900
			White (1, 2, 8, 9)	F100T17/W	2.30 T	STD	12	....	4200
			White (1, 8, 9, 10)	F100T17/45W	2.30 T	STD	12	....	4000
			Soft White (1, 8, 9)	F100T17/SW	2.50 T	STD	12	....	3300

F SLIMLINE (FLUORESCENT) LAMPS

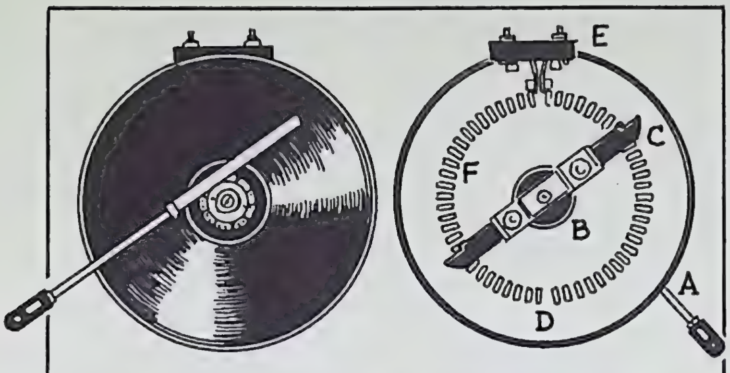
Watts	Bulb	Base	Description	Lamp Ordering Abbreviation	List Price and Tax Symbol	Std. or Supp.	Ctn., Std. Pkg. Qty.	Hours Life	Approx. Lumens
16-25	T-6 42"	Single Pin	White (2, 4, 6)	F42T6/W	$1.55 T	SUPP	24	......	......
			White (3, 4, 6)	F42T6/45W	1.55 T	STD	24	......	880 1320
			Soft White (4, 6)	F42T6/SW	1.70 T	SUPP	24	......	......
24-39	T-6 64"	Single Pin	White (2, 4, 6)	F64T6/W	1.75 T	SUPP	24	......	......
			White (3, 4, 6)	F64T6/45W	1.75 T	STD	24	......	1370 2150
			Soft White (4, 6)	F64T6/SW	1.90 T	SUPP	24	......	......
22-38	T-8 72"	Single Pin	White (2, 4, 6)	F72T8/W	2.00 T	SUPP	12	......	......
			White (3, 4, 6)	F72T8/45W	2.00 T	STD	12	......	1340 2250
29-51	T-8 96"	Single Pin	White (2, 4, 6)	F96T8/W	2.70 T	SUPP	12	......	......
			White (3, 4, 6)	F96T8/45W	2.70 T	STD	12	......	1800 3500

CIRCLINE (FLUORESCENT) LAMPS

Watts (1)	Bulb (2)	Base (3)	Description (See Footnote Number) (4)	Lamp Ordering Abbreviation (5)	List Price and Tax Symbol (6)	Std., or Supp. (7)	Ctn., Std. Pkg. Qty. (8)	Hours Life (9)	Approx. Lumens (10)
32	T-10	4-Pin	White (1, 2, 4)	FC12T10/W	$1.75 T	STD	12	2500	1600
			White (1, 3, 4)	FC12T10/45W	1.75 T	SUPP	12	2500	......

GERMICIDAL LAMPS

Watts (1)	Bulb (2)	Base (3)	Description (See Footnote Number) (4)	Lamp Ordering Abbreviation (5)	List Price and Tax Symbol (6)	Std. or Supp. (7)	Ctn., Std. Pkg. Qty. (8)	Hours Life (9)	M.O.L. (10)
4	T-4	Oval Small 4-Pin	(4)	G4T4/1	$3.40 N	SUPP	12	2500	5⅜
8	T-5 12″	Min. Bipin	(4)	G8T5	4.25 N	SUPP	24	2500	......
15	T-8 18″	Med. Bipin	(5)	G15T8	4.50 N	STD	24	2500	....
30	T-8 36″	Med. Bipin	(5)	G30T8	6.75 N	STD	24	2500	...



1. JAPPANED SIDE OF DIMMER PLATE SHOWING PULLEY, CHAIN, CHAIN HOLDER, AND DRIVE ROD.

2. VITEROUS ENAMELLED SIDE SHOWING CONTACTS, BALANCED CONTACTS, BALANCED CONTACT ARM, AND SILENT SPRING STOP.

Dimmers

Dimmers are an electrical resistance device designed to vary the supply of current on the stage and other effect lighting.

When a dimmer is in use, it does not save current as the circuit load is constant. For example, a circuit is using 5000 watts of electricity and the lamps are lowered in intensity by a dimmer. The lamps appear to be burning at one half brilliancy or 2500 watts. To accomplish this, the dimmer is using 2500 watts in its resistance and disappating this current in the form of heat. THE CIRCUIT IS STILL USING 50c0 WATTS.

It is therefore important to remember that dimmers are useful where they are necessary but that lamps "turned down" by dimmers use the same amount of current as if they burned at full brilliancy.

Moving parts should be kept tight to prevent arcing.

All inflammable materials should be kept away from dimmer locations since considerable heat develops during the operating of the dimmer.

A. Operating Handle
B. Center Bearing
C. Contact Arm with Shoes
D. Vitreous Enamel Plate Containing Resistance Wire
E. Connection Block
F. Contact Points for Varied Light Control

Cleaning Lights

House lighting circuits should never be used while cleaning a theatre as their use involves the waste of large amounts of electric current.

Portable cleaning lights, consisting of an iron standard and base with two lamps on a cross arm, will provide low cost and efficient lighting for cleaning purposes.

These lamps are provided with hooks to hang the long extension wire, thus keeping the entire unit neat and low in maintenance cost.

FANS AND MOTORS:

a. Inspect all bearings and oil reservoirs on fans and motors to see that oil level is properly maintained and change oil once a month. Inspect ring oilers inside of bearings to see that shaft is properly lubricated and that bearings do not heat up. See that bearings are properly bolted down to bearing supports.

b. See that canvas connection between the discharge side of fan and the supply duct and also the canvas connection between the intake side of fan and the duct work is in good condition and is properly held in place.

c. SEE THAT MOTOR STARTING DEVICES ARE IN PROPER CONDITION AND AVOID STORING MATERIAL ON TOP OF STARTING CABINETS.

d. Inspect fan belts and tighten same if slippage is excessive, by moving back the motor on its sliding base. Avoid an unnecessarily tight belt to prevent excessive wear. Use belt dressing sparingly to prevent slippage of belt. If these items need attention, it is important that you notify your Maintenance Department immediately.

e. Commutators and brushes should be kept clean at all times to prevent sparking. Inspect and renew brushes and brush springs, and replace if necessary.

f. Examine motor frames, bases and floors around fans and motors to see that they are kept free from oil which may be splashed from bearings.

AIR DISTRIBUTING SYSTEM:

Thoroughly clean out all portions of the entire air distributing system to see that the spaces are free from accumulation of dust or stored rubbish. Air chambers and plenum must not be used for storing material of any kind. This is a serious hazard. Dirt and dust readily accumulates on such stored material, and this seriously interferes with the proper operation of the ventilating system. Contact your Maintenance Department for this work. The exhaust fan discharge to the outdoors should be given thorough inspection similar to outdoor air intake connections.

AIR INTAKE:

On all fresh air jobs the return damper should now be open for the heating season.

BELTS:

A thorough check of all belts, also pulleys, as to the condition of wear and tear, is necessary.

FAN:

Check the fan drive for alignment with the motor drive and see that the bearings of the fan have proper lubrication. IF FAN BEARING THROWS OIL, CALL YOUR MAINTENANCE DEPARTMENT IMMEDIATELY.

EMERGENCY BATTERIES:

Wet Batteries - Portable Type:-

These are equipped with a special slow discharge battery, one or two headlights and an automatic relay which is connected to the Electric Light Lines.

The unit is mounted and assembled in a metal case.

The plug feeding the automatic relay must be connected to an electric light line that is "alive" all the time; that is, one not controlled by a panel switch.

In the event that there is a failure of electric current, the relay automatically turns on the battery current.

The battery and connecting wires must be kept free from corrosion. All contacts must be kept clean and tight.

The battery should be fully charged at all times and the entire unit tested at least once a week.

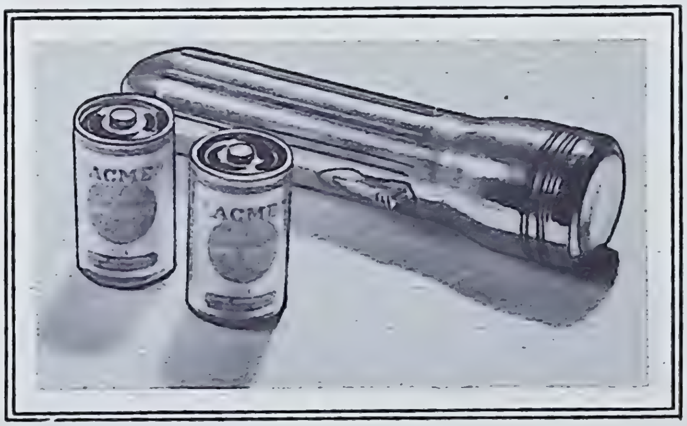
If desired the unit can be obtained with a dry type trickle charger.

Dry Battery Emergency Units:-

These units are the same in appearance and operation as the wet battery type described above.

Instead of the wet storage battery, several 7½ volt dry cell batteries are used. An ammeter is mounted on the side of the case with a special marked scale indicating when the batteries require replacement.

Units should be tested for correct operation weekly.



FLASHLIGHTS:

Flashlights are so constructed that if given proper care, they will last indefinitely.

Do not subject flashlights to rough use, such as dropping, throwing around, et cetera.

Keep all contact surfaces clean, using fine sand paper or crocus cloth.

Do not allow discharged cells to remain in the flashlight, as this will cause corrosion. Corrosion will destroy the switch and make it impossible to remove the batteries without breaking the flashlight case.

If the glass lense becomes broken, do not throw the flashlight away. The lense can be replaced at a small cost.

For general use the two cell flashlight, using two Size D cells, is most satisfactory.

For parking space a three cell tubular, long beam flashlight or a six volt hand lantern will provide excellent service.

FLASHLIGHT BATTERIES:

Flashlight batteries should never be stored near hot steam pipes, radiators, et cetera, as this will dry out the internal moisture required for the battery's performance.

Each battery is dated to cover the period of time that it can be carried in stock without use. In other words, batteries kept too long on the shelf will be worthless even if not used.

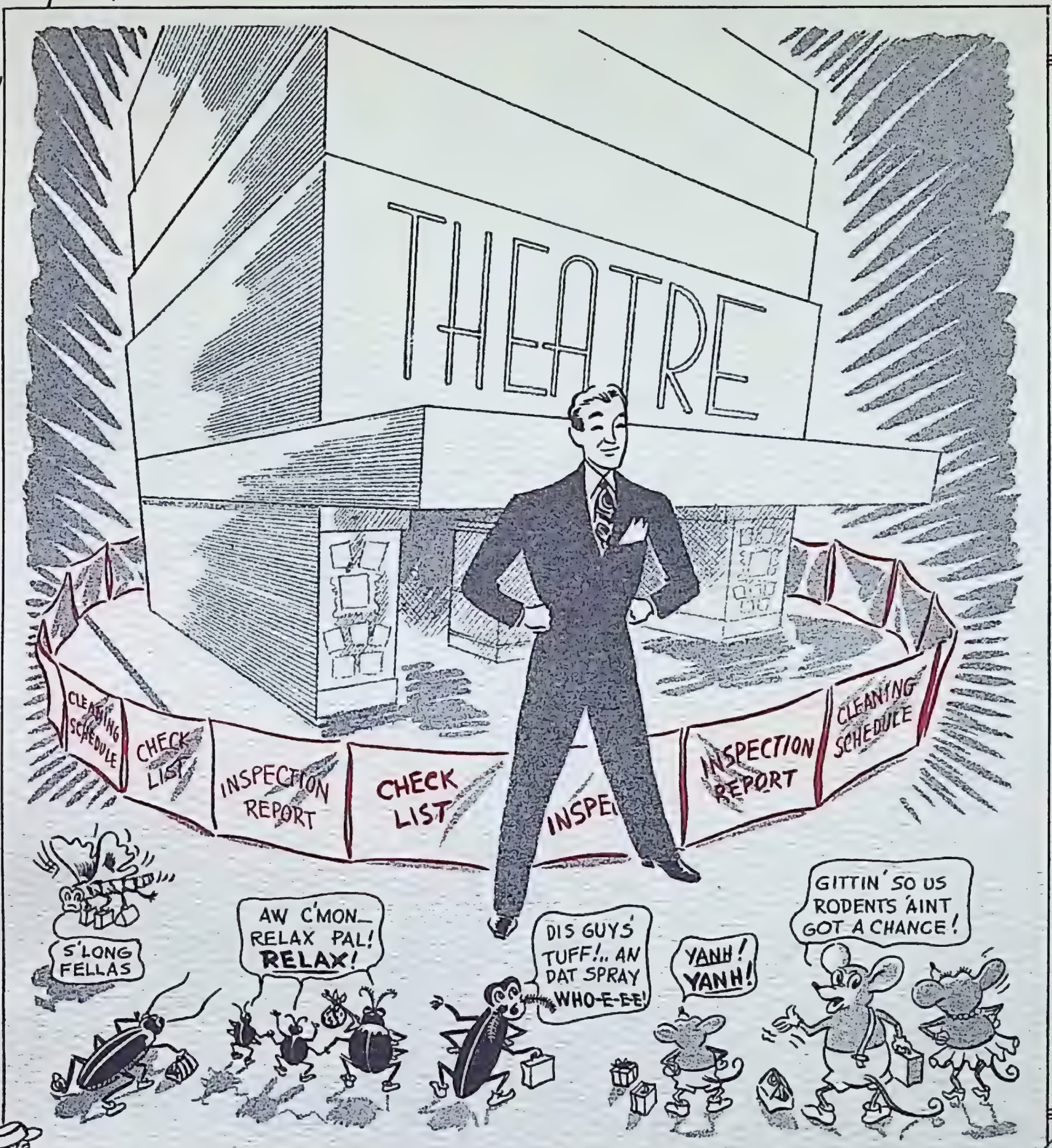
For satisfactory battery service, do not over order. Use batteries with older dating first.

M&P
THEATRES

EXTERMINATORS

Maintenance Manual

EXTERMINATORS - VERMIN - RODENTS


THEATRE
CLEANING SCHEDULE
CHECK LIST
INSPECTION REPORT
CHECK LIST
INSPEC
INSPECTION REPORT
CLEANING SCHEDULE
S'LONG FELLAS
AW C'MON RELAX PAL! RELAX!
DIS GUYS TUFF!.. AN DAT SPRAY WHO-E-E-E!
YANH! YANH!
GITTIN' SO US RODENTS 'AINT GOT A CHANCE!

CONSTANT VIGILANCE MUST BE FOREVER MAINTAINED AGAINST THE INROADS OF FILTH AND DIRT!

Exterminators—Vermin—Rodents

Cleanliness is the Best Means of Control

The most common ways of vermin being introduced into a theatre are by carrier and uncleanliness.

A carrier can be a patron upon whose person vermin exist, or merchandise of any description that is shipped to the theatre contacting vermin en route or at its point of shipment.

Secondly, vermin can infest a theatre because of uncleanliness of food attraction. This means piles of uncovered rubbish inside or outside the building, dirty floors or carpets, neglected seats, improper candy and pop-corn storage, etc.

In any case, when vermin are first noted, proper and diligent steps must be taken immediately to rid the theatre or building of these pests before damage or unfavorable publicity starts.

Once vermin in any form enter your theatre, breeding starts immediately, and if neglected, the situation becomes out of hand with the result that considerable expense, and in many instances material damage, is the final answer.

BED BUGS

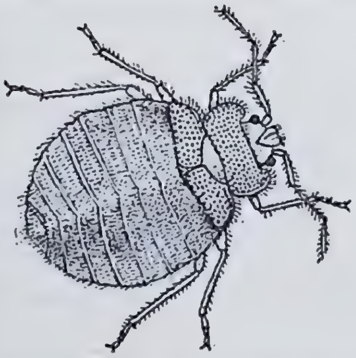


FIGURE 1.
DORSAL VIEW OF MATURE BED BUG BEFORE ENGORGEMENT. MUCH ENLARGED.

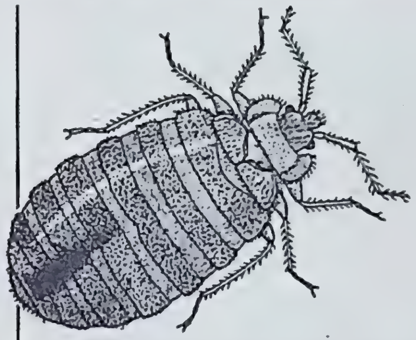


FIGURE 2.
DORSAL VIEW OF MATURE BEDBUG ENGORGED WITH BLOOD, SHOWING DISTENTION OF BODY AND ALTERED APPEARANCE. MUCH ENLARGED.

The mature, well-grown bedbug (Cimex lectularius L.) is a wingless brown insect between one-fourth and three-eighths of an inch long, with the shape of the unfed specimen shown in figure 1. When engorged with blood, the body loses its paper-thin appearance and becomes more elongated and swollen, as shown in figure 2, and the blood within its body gives it a more reddish appearance. The differences in shape, due to the amount of food the body contains, often leads to the inquiry as to how many kinds of bedbugs infest American homes. There is only one species that habitually attacks man and establishes itself in his living quarters in numbers, warranting control measures. This common bedbug is often called also a "chinch," "red coat" or "mahogany flat." It has never been proved that bedbugs serve as disease carriers in the United States.

HOW BEDBUGS FEED UPON MAN

Bedbugs are sucking insects. Their mouth parts are modified to form an elongated sharp beak or proboscis which can be thrust into the skin and through which blood can be drawn. It requires a well-grown bedbug from 3 to 5 minutes to become engorged with blood if its feeding is unmolested. Once filled to capacity, the bug withdraws its beak and quickly crawls to its hiding place where it remains for several days digesting its meal, seemingly indifferent to its host. When hunger finally reasserts itself, the bedbug seeks out its host for another meal.

FOOD OF BEDBUGS

The food of bedbugs is the blood of warm-blooded animals, principally of man. Sometimes bedbugs become very abundant in hen houses, where they feed upon poultry at night. Rabbits, guinea pigs, white rats, canaries, and other pets may be weakened by loss of blood due to bedbug attack. Many believe that bedbugs develop in trees and can subsist on sap, or on the dried juices of seasoned wood in houses, but there is no evidence that this is true. Moreover, bedbugs cannot eke out a subsistence from dirt in floor cracks and other places in buildings. A very persistent and erroneous belief is that old pine wood breeds bedbugs.

WHEN BEDBUGS FEED

Bedbugs are normally nocturnal. When the lights are out they emerge from their daytime hiding places and seek to feed upon their host. Sometimes, when very hungry, they will feed during the daytime in subdued light. Their normally nocturnal habit is modified necessarily when they infest furniture in rest rooms, stores, theatre seats, desks in offices, and similar locations that are not frequented by man throughout the night. In such places bedbugs often bite persons during the day.

IRRITATION CAUSED BY FEEDING

When bedbugs bite, they inject a fluid into the skin of their host which assists them in securing blood. In many instances the bite results in no irritation and many persons are blissfully unaware that they have been bitten. Only too often, however, the skin is greatly irritated by the biting process, and inflammation and welts develop, accompanied by much itching. The offensive odor associated with heavy bedbug infestations of considerable standing is the result of an oily liquid emitted by the insect from two scent glands.

HOW BEDBUGS ARE DISTRIBUTED

Bedbugs are distributed in many ways. They crawl freely between their victims and their hiding places but do not migrate from room to room or from house to house as freely as many believe. Probably clothing and baggage of travelers and visitors, secondhand furniture, and laundry done in private homes are the chief means of spread. Operators of public gathering places find it necessary to guard their furnishings from bedbug infestations brought unwittingly to their establishments by patrons.

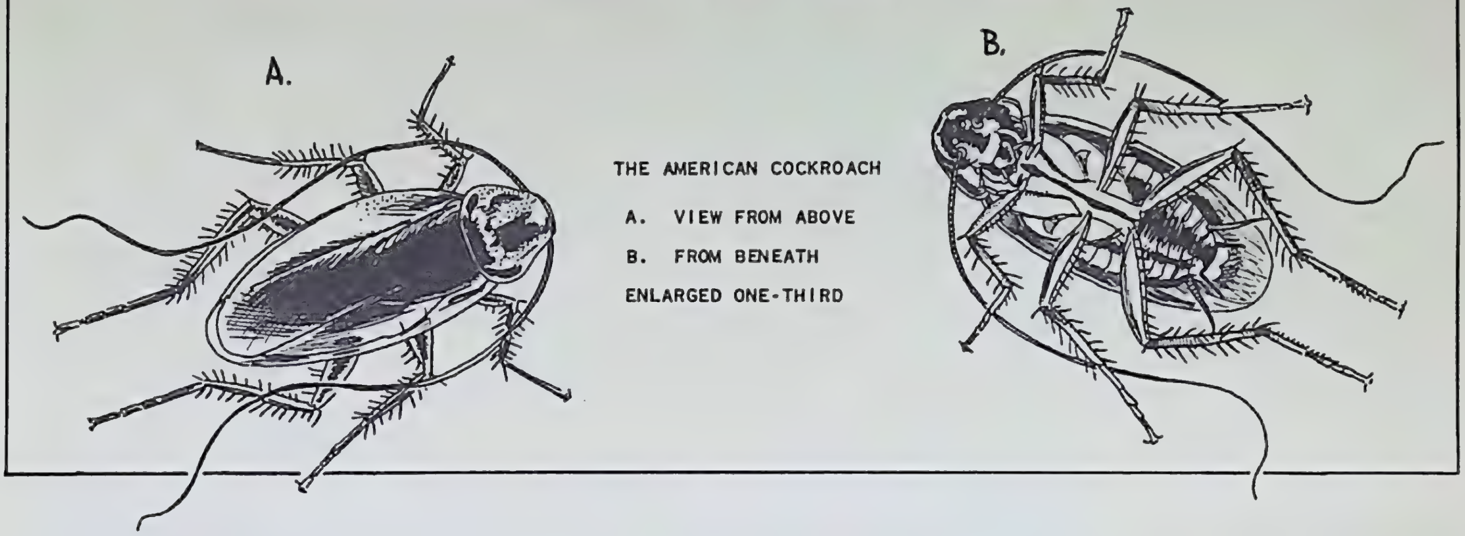
CONTROL

When bedbugs are discovered, use insectall. Simply follow the directions on label. Use spray gun. For seats, use oil can. (See photo under "Seats" for type of can.)

IMPORTANT:

If you have continuous difficulty with the above, we recommend you contact the maintenance department which will arrange for a certified Extermination Company.

COCKROACHES and Their Control



THE AMERICAN COCKROACH
A. VIEW FROM ABOVE
B. FROM BENEATH
ENLARGED ONE-THIRD

Cockroaches may become troublesome in any establishment. They are notoriously destructive and annoying in the kitchens and pantries of houses, restaurants, hotels, stores, manufacturing plants, libraries, etc. It is not only the food and other possessions, such as bookbindings and fine fabrics which they eat or disfigure that make them important enemies of man, but also the pollution of foods over which they run placing them in the role of disease carriers. Of the large sums spent by owners of apartment houses, hotels, hospitals, and business establishments for pest-control services, a very large proportion is for cockroach suppression; and thousands of dollars are spent annually by the American public to fight roaches in the home. While cockroaches can be controlled without great difficulty by home owners, commercial exterminators are available in most cities for such work.

HABITS

Cockroaches are nocturnal in habit. They hide during the day in sheltered, darkened places where they congregate in large masses. In the home they usually hide near the sink and the drainboard, behind the kitchen cabinet, behind radiators, under the trim of doors and windows, etc. They forage at night when all is still and dark. If disturbed, they run rapidly for shelter and disappear through cracks, through holes in wall plaster, down water or steam pipes, and through similar openings. After dark, when they have come out to feed, enter the room suddenly, turn on the light, and watch them run for their hiding places. Knowledge of where they conceal themselves is usually the key to their control.

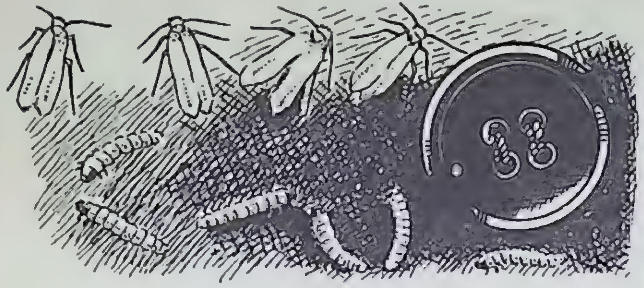
CONTROL

Cockroach elimination is not difficult if the sources of infestation can be controlled. In loosely constructed buildings or where a mild climate permits roaches to develop outdoors, houses are constantly being reinfested from outside by crawling and flying roaches. No control will keep a house free from roaches continuously if sources of reinfestation exist. Use Insectall spray by direct contact.

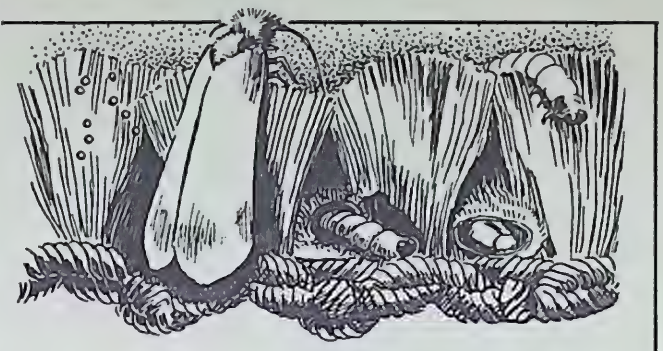
IMPORTANT

If you have continuous difficulty with the above, we recommend you contact the maintenance department, which will arrange for a certified Extermination Company.

MOTHS



ADULT WEBBING CLOTHES MOTHS AND WORMS OR LARVAE. ON A VEST. ABOUT 1½ TIMES NATURAL SIZE.



ENLARGEMENT OF ADULT MOTH ON EDGE OF CARPET SHOWING EGGS AND LARVA PROTRUDING FROM TUBE.

CLOTHES MOTHS

Clothes moths are found in nearly all dwellings regardless of the location. Their abundance is influenced by the temperature and humidity maintained in the house, the type of house construction, furnishings, and the thoroughness of the house cleaning. They are exceedingly destructive, particularly from an aesthetic standpoint, and the damages and expenditures for their control amount to many millions of dollars annually.

DESCRIPTION. DEVELOPMENT AND FOOD

The troublesome clothes moths are very small and have a wing spread of about half an inch. The webbing clothes moth is uniformly yellowish or buff-colored; the case-bearing clothes moth is similar in color, but has indistinct dark spots on the wings.

Moths fly lazily in darkened corners, or just beyond the range of the brightest rays of the lamp. They prefer darkness. They do not flit about lights. When clothing and other objects are suddenly moved, moths can often be seen running rapidly or flying to conceal themselves in folds of clothing, cracks, or other dark places. The parent moth does not eat clothing. Moths usually live not more than 2 weeks, seldom 4 weeks. It is said that moths never fly unless all their eggs have been laid; this has been proved untrue. Moths lay from 100 to 300 soft, white eggs about 1/32 of an inch long. These eggs should not be confused with the hard, gritty, variously colored pellets of larval excrement which are often abundant on moth eaten fabrics. These eggs are deposited in the nap of clothing, in the pile of furniture upholstering, in cracks and elsewhere, but are not fastened to the surface upon which they are laid. They hatch on the return of warm weather.

The newly hatched worm, or larva, crawls readily Once on its food, it starts spinning a shelter of silken threads, in which to conceal itself.

CONTROL

Moth control is complicated because the fight has many fronts. Judgment must be exercised in selecting a method of control suited to the need. Good house cleaning normally will be sufficient.

(Most of the practices recommended for controlling clothes moths are also helpful in the destruction of carpet beetles and certain other household pests). The best method for controlling moths is a thorough and frequent spraying of insectall.

Please remember that spotted and dirty uniforms not regularly cleaned and smocks that are greasy are some of the contributing factors in developing moths.

Dry cleaning kills all forms of moths at the time of treatment but does not impart moth resistance.

TREATMENT OF CLOSET CONTENTS

To control moths in a closet brush all clothing thoroughly, clean the closet thoroughly, and seal all cracks in the plaster and about baseboards with crack fillers.

Equip door-frames with rubber or felt gaskets against which the door can be shut tight at all points. Place on the top shelf, or hang in muslin bags from hooks, 1 pound of either naphthalene or paradichlorobenzene for each 100 cubic feet of closet space.

The fumes given off by the slow evaporation of the crystals quickly stop moth larvae from feeding and ultimately kill them if the fumes are retained long enough in proper concentration.

It is, therefore, important that the concentration of the fumes be maintained by making sure that the closet is perfectly tight and has a tight-fitting door that is kept closed except for brief periods when clothing is being put in or taken out. Set aside a closet to be used only for storage.

FURNITURE

Upholstered furniture with covers containing animal fibers has in the past been seriously damaged by moths feeding not only between the rows of pile on the surface but also on the threads that pass beneath the warp. Many covers containing wool and mohair are factory-treated today to render them moth resistant, and these should have preference over untreated covers. Covers of cotton, linen and rayon are not injured by moths. Moths in furniture can be killed best by having the infested pieces fumigated by furniture-storage warehouses or other concerns offering a fumigation service. They can also be sprayed with a contact spray by means of a power sprayer. Susceptible covers should be brushed carefully and frequently, and where slip covers are used, they should be removed at frequent intervals so that the furniture can be brushed or vacuum-cleaned. Furniture exposed to zero temperature for 2 days will be rid of living moths.

IMPORTANT:

If you have continuous difficulty with the above, we recommend you contact the maintenance department which will arrange for a certified Extermination Company.

HOUSE ANTS

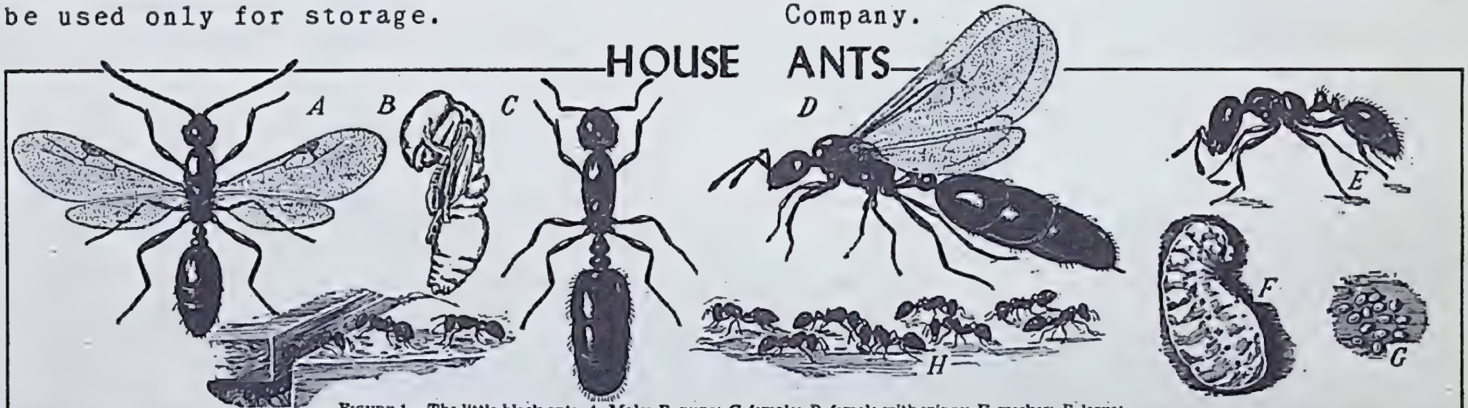


FIGURE 1.—The little black ant: *A*, Male; *B*, pupa; *C*, female; *D*, female with wings; *E*, worker; *F*, larva; *G*, eggs; *H*, group of workers in line of march. *A* to *G* much enlarged, *H* about 3 times natural size.

Several species of ants invade theatres. They all form colonies or nests, in which the queen ants remain. The queens lay the eggs which produce young ants which in turn have to be fed by the worker ants. The workers are the ants that are found attacking foods and crawling about the house.

They collect food and carry it back to the nest, where they feed it to the queens and the young. Killing some of these workers merely weakens the colony but does not affect the queens or the development of the young unless so many workers are killed that the colony's food supply is seriously reduced. In fighting ants, therefore, the secret of success it to locate and destroy the nests, including the queens and the young. When this is done, the colonies usually perish.

THE MORE COMMON SPECIES

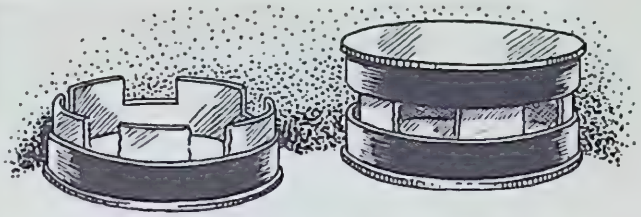
Pharaoh's ant is one of the most common and troublesome of house ants. It is a red ant and is so small that it is hard to see. In temperate regions it passes its entire existence in heated houses, forming its colonies beneath floors, in wall spaces, etc. It is best killed with poisoned baits made according to formula 1 or 2, when powders, chemical barriers, or ant tapes are not used. The large yellow ant is light yellow. During the winter and spring, in heated houses, the winged forms (which have dark-colored wings) are often found emerging from the soil through cracks in basement floors. Their colonies are best destroyed by means of carbon disulphide or hot water.

The little black ant (monomorium minimum Buckley) is, as its name implies, a tiny black specie. It is often found nesting in decayed bits of wood in the house, and beneath garage and walk pavings where it form colonies in the soil. When it is found nesting in the theatre, use a poisoned bait for control; when out of doors, use carbon disulphide or hot water.

The thief ant (Solenopsis molesta Say) lives out of doors and is troublesome in houses only during the warmer seasons of the year. Its workers are tiny, yellowish, and even smaller than the Pharaoh's ant.

CONTROL OF ANTS

Ideal ant control is based on the destruction of the queens and the young in the nest itself. If the nest can be found by following back along the line or trail or worker ants as they come to and go from food, it is not difficult to kill the colony, particularly if it is located, as it often is, out of doors or in the soil beneath a cracked cement basement floor. If the worker ants are proceeding from a crack in the cement of the driveway, from between the bricks of a walk, or from a similar place, merely pour 1 or 2 tablespoonfuls of carbon disulphide down the crack and repeat this after 24 hours if necessary. Carbon disulphide is a liquid that can be purchased at drug or other stores.



PILL BOX FOR HOLDING POISONED BAIT: A. BOX WITH SIDES CUT AND COVER REMOVED: B. BOX READY.

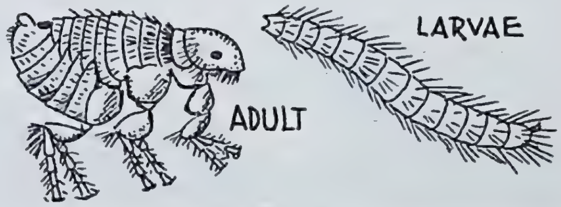
Buckeye paste or ant traps are the best means of extermination.

The maintenance department will service you with Buckeye. Ant traps can be purchased locally.

IMPORTANT:

If you have continuous difficulty with the above, we recommend you contact the maintenance department which will arrange for a certified Exterminating Company.

Regular or Sand FLEAS



Occasionally theatres have this problem. It is difficult to determine their existence in theatres. Still, make sure that you give this matter immediate attention, as it can cause a great deal of inconvenience and adverse publicity.

METHOD OF CONTROL OF FLEAS

Spray infected areas freely with insectall.

SILVERFISH

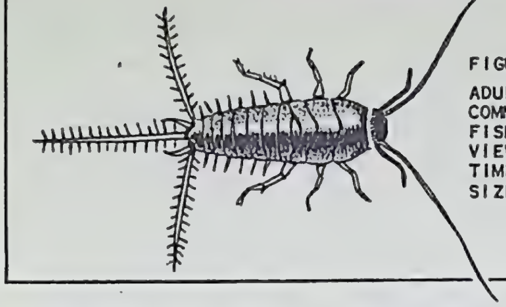


FIGURE 1.
ADULT OF THE COMMON SILVERFISH (DORSAL VIEW) THREE TIMES NATURAL SIZE.

Silverfish are slender, wingless, scale-covered insects, slightly more than three-eighths of an inch long, with three long tail-like appendages at the hind end of the body, and with two long, slender feelers at the head. They are nocturnal, hiding during the daytime, and are not often seen except when objects are moved. Then they dart suddenly from recesses thus exposed and glide quickly out of sight, often thwarting all attempts to catch them. There are at least two species. The more common one (Lepisma saccharina L.) (fig.1) has a uniform silvery or pearl-gray color; the other called the firebrat (Thermobia domestica Pack) is distinguished by the dusky markings on its back.

Injury by silverfish has increased greatly during the last 10 years, probably because of the increase in numbers of evenly heated houses.

WHERE FOUND

Silverfish thrive best in damp, warm basements, but cause serious harm almost anywhere, even in rooms and attics in country homes that are never artificially heated. The fire brat is more apt to be found in very warm locations. In apartment houses silverfish are most abundant in heated basements, from which they follow pipe lines to apartments on the lower floors. They are likely to be present in surprisingly large numbers in new buildings, the walls of which are still damp. Coal deliveries do not bring silverfish to theatres as some believe.

FOOD

Silverfish feed upon the sizing in paper, bookbindings, wallpaper, and starchy insulation materials, and may do much harm to these. They eat holes to some extent in thin fabrics, particularly those of rayon. Starched clothing and lace curtains may be ruined by silverfish as they extract the starch from them. Experiments indicate that they prefer vegetable foods having a high starch or sugar content, and they are very fond of most wheat flour.

METHOD OF CONTROL

As silverfish are an unusual and difficult vermin to control, we recommend that when you discover them, you call the maintenance department immediately for an expert who will help control this vermin intelligently.

Subterranean Termites

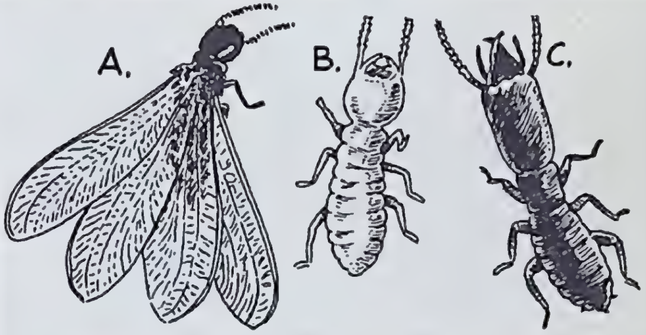


FIGURE 1. WINGED SEXUAL ADULT, OR REPRODUCTIVE (A) ADULT WORKER (B) AND ADULT SOLDIER (C) OF THE EASTERN SUBTERRANEAN TERMITE.

HOW TO RECOGNIZE SUBTERRANEAN TERMITES

Subterranean termites are social in nests or colonies in the ground. The adult workers and soldiers are wingless, and are grayish white in color and similar in appearance, except that the soldiers have much larger heads and longer mandibles, or jaws. Both these forms lead a concealed life within their tunnels in wood and soil. Termites can be highly destructive to the wooden structure of buildings. Termites may be easily distinguished from true ants by the fact that termites do not have the strongly constricted waistline that is characteristic of all ants.

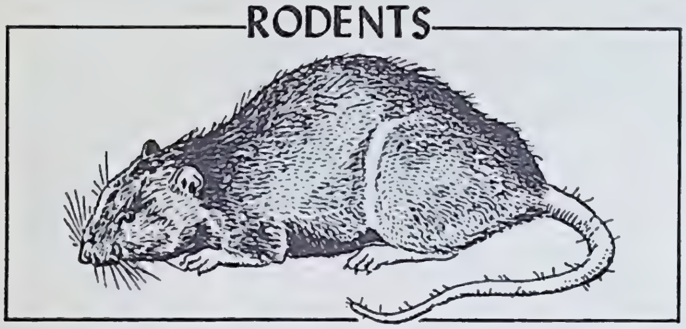
DISTRIBUTION OF TERMITES

Termites are known to occur practically throughout the tropical and temperate parts of the world. The subterranean species are common throughout most of the eastern half of the United States and along the Pacific coast, but are abundant from Massachusetts south along the Atlantic coast.

CONTROL OF TERMITES

Should you encounter this serious pest, lose no time before requisitioning the maintenance department for an expert on the extermination of termites.

RODENTS



Rats and mice are parasites and a health menace throughout the country.

Government, State and City Health Departments have tried to minimize the above situation. Although great headway has been made throughout the country, rats are still considered an unhealthy hazard.

In Europe rats carry bubonic plague, which spread over Western Europe and created a great disaster in Glasgow. Statistics show that it killed 50,000 people in three months, a powerful indication of the importance of rat and mice control. A recent article in the Boston Traveler reads as follows:

> "The rat menace today in the United States is terrifying, and all the leading cities of the country have realized the horror of this menace. Boston has been extremely active in its efforts to destroy the rat and the same can be said of other large cities."

Therefore, remember the importance of rat control since rats are a serious health menace. Keep in mind that rats in a theatre can create FIRE as well.

DO NOT ALLOW THE RAT SITUATION TO BECOME SERIOUS. If you cannot control it yourself, CALL YOUR MAINTENANCE DEPARTMENT immediately for experts on rat extermination.

Mice are an unnecessary nuisance. They can easily be detected since they generally leave their calling cards. Stop this hazard promptly. Get down to its source.

CONTROL

Mouse traps with cheese bait have proved practical. A theatre cat which is more or less of a pet also can be turned loose after the show.

Mouse seed is another form of extermination.

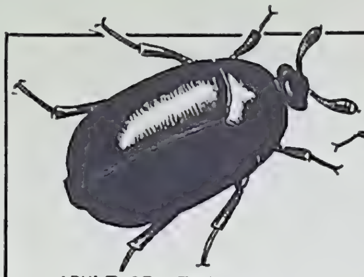
If you get into any difficulty, call the maintenance department for expert exterminators.

PLEASE NOTE:

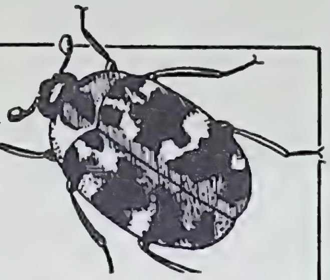
Rats and mice cannot exist without food or shelter. Therefore, you can minimize their breeding or continued existence by eliminating the opportunity for them to obtain food.

CARPET BEETLES

Carpet beetles, sometimes called "buffalo moths", can cause great damage to furnishings, clothing containing wool, hair bristles, fur, feathers and other animal substances. They can also subsist upon mealy or floury material. Normally they do not eat wood and never weaken timbers. They do not spin webbing on the article attacked, as do some clothes moths. Because of their habit of entering wall spaces, where they may remain quietly for some time out of reach of the ordinary house cleaning operations, they are even more difficult to control than clothes moths in many houses.



ADULT OF THE BLACK CARPET BEETLE SHOWN ENLARGED.



ADULT OF THE COMMON CARPET BEETLE SHOWN ENLARGED.

KIND OF CARPET BEETLES

Four species of carpet beetles are commonly found in dwellings. They are the common carpet beetle (Anthrenus scrophulariae L.), the furniture carpet beetle (A. corax Waterh,) the varied carpet beetle (A. verbasci L.) and the black carpet beetle (Attagenus piceus Oliv). None of these, in any stage of growth, has a body length greater than about three-sixteenths to one-fourth of an inch, with the exception of very large specimens of black carpet beetle larvae, which may shed skins half an inch long. The adults are hard-shelled beetles which are a broad or elongated oval.

The adult black carpet beetle (fig.3) is uniformly blackish, with brown legs. The others have blackish or brownish bodies, but their body color is concealed by a dense covering of small scales so colored as to form designs that are helpful in separating the species. Adults of the common carpet beetle (fig.4) have a dull reddish band extending down the center of the back. The adults of the furniture carpet beetle are mottled with patches of white, yellow, and black in varying design, and are white underneath. The adults of the varied carpet beetle are smaller on an average than those of other species; they resemble the furniture carpet beetle in that they are broadly oval and mottled, but they have scales of less brilliancy.

The larvae, or grubs, of all these species, except the black carpet beetle, are more or less oval in shape. The larvae of the common carpet beetle and those of the furniture carpet beetle are much alike, and their black bristles have a blackish cast to their whitish bodies. The larvae of the varied carpet beetle has a brownish or tawney appearance. The larvae of all three of these carpet beetles have three tufts of bristles on each side at the rear end of the body which normally lie flat against the sides of the body. The larva of the black carpet beetle is the only one that is easily distinguished at a glance from the other species; it is golden, yellowish or chocolate brown, elongated, with a tuft of long brown hairs at the end of its body.

CONTROL

The control of carpet beetles is not difficult, but when infestations are of long standing, only persistence in continuing the application of remedial measures will stamp them out. Carpet beetle control also will result in the control of clothes moths.

MANIPULATION OF CARPETING

Carpet beetle increase is aided by carpeting that covers the entire floor. If the carpeting extends only to within 12 to 18 inches of the walls, the edges can be cleaned frequently and the carpet beetle larvae removed in the cleaning process. Carpets tacked down favor insect increase. Both sides of the edges of carpeting should be vacuum-cleaned or swept frequently. Carpets to be stored should be thoroughly cleaned on both sides, well covered with flake naphthalene or paradichlorobenzene, and rolled tightly. It is better to wrap rug rolls well in unbroken paper extending over the ends so that it can be turned back several times to prevent the entry of insects at the ends of the rug.

BRUSHING AND VACUUM TREATMENTS

Frequent brushing and vacuum-cleaning of clothing, rugs, and other susceptible articles remove many carpet beetle larvae, and if the dust is taken promptly from the house, or burned, much good is done. Insecticide will definitely destroy beetles.

IMPORTANT

If you have continuous difficulty with the carpet beetle infestations, we recommend you contact the maintenance department which will arrange for a certified Extermination Company.

HOUSE FLIES and MOSQUITO

CONTROL

There are a number of ways in which house fly problems can be controlled or attacked in theatres.

In most instances the above pests locate themselves in the Manager's office, Ladies' and Men's rooms.

Therefore, common sense should be used in handling this problem, which in our opinion is not serious.

At present, the company is not in favor of the use of any insecticides or any other type of vermin or rodent control other than those referred to in this article.

Flit, thru means of a spray, has proved practical and harmless.

The maintenance department at present is analyzing new so-called bombs or other chemicals used during the War.

Please play safe. Contact the maintenance department for full information on the above.

M&P THEATRES

FIRE EXITS
EXTINGUISHERS

Fire Exits—Fire Extinguishers

CAREFUL MAINTENANCE OF FIRE EXITS AND FIRE EXTINGUISHERS IS A MUST!

Fire Exits — Fire Extinguishers

FIRE ESCAPES AND EXIT DOORS:

1. Examine all fire escapes, stairways, and rails.

2. MAKE SURE THAT ALL LIGHTS ON FIRE ESCAPES ARE WORKING.

3. Make sure cantilever is in good working order. It should be tested once a week.

4. Check counterweight system and cables on cantilever.

5. Check safety lock bar.

6. Check for rusty bolts, and rust condition on fire escapes.

7. Check canopy over fire escapes.

8. Keep fire escape areas clear of rubbish or any encumbrances.

9. It is recommended that a white strip be painted on fire escape treads.

10. Scrape red lead and paint fire escapes at least every 1 to 2 years.

11. Check for loose, bent, or missing treads on fire escapes.

12. Make sure exit doors do not block passage to fire escapes.

EXIT DOORS

Maintenance of exit doors should include:

A. Tightening of hinges.

B. All exterior metal and woodwork to be kept painted.

C. Hinges to be kept oiled to prevent wear, and to maintain proper action of door.

D. During winter season, all ice and snow formation should be removed.

E. No locking devices of ANY DESCRIPTION must be used on exit doors, other than panic bolts.

F. Exit doors should work freely.

G. Check panic bolts and hinges. These should work freely.

EXIT PASSAGEWAYS:

A. All exit passageways must be kept clear at all times, including weeds in summer, and snow and ice in winter.

B. Drains in these exit passageways must be checked daily, and kept clean.

C. The lighting system in these passageways should be adequate and kept in working order.

D. Do not attempt to economize by POOR LIGHTING of these areas.

E. All exit passageways should have posted directional signs to the street.

F. All stairways or steps in exit passageways should be well maintained and white stripped where necessary.

G. All iron gates used in connection with stairways should be kept in good working condition, and have no locking device other than panic bolt.

H. All pavements should be checked for anything that could cause tripping, etcetera.

FIRE EXTINGUISHERS

Principal Types of Fire Extinguishers

TYPE	*CARBON TETRACHLORIDE*	*SODA-ACID*	*FOAM TYPE*
APPEARANCE AND CONSTRUCTION	SMALL HAND PUMP	LARGE BRASS CONTAINER CONTAINING BOTTLE OF SULPHURIC ACID AND BICARBONATE OF SODA.	SIMILAR TO SODA-ACID BUT DIFFERENT INSIDE CONSTRUCTION. LABEL FOAMITE.
SPECIAL PROPERTIES	MAY GIVE OFF GASES NON-CONDUCTOR OF ELECTRICITY	ABOUT THE SAME AS WATER	SMOTHERING EFFECT
USE FOR	ELECTRICAL FIRES	GENERAL USE	OIL FIRES, GASOLINE FIRES
DON'T USE FOR	FILM FIRES - GENERAL USE	ELECTRICAL FIRES OR GASOLINE OR OIL FIRES	
TEST	EVERY SIX MONTHS BY PUMPING INTO GLASS VESSEL CHECK CAPACITY	EVERY 3 OR 4 MONTHS BY LIFTING TO JUDGE CAPACITY BY WEIGHT. RECHARGE EVERY YEAR	SPECIAL -- SEE PLATE ON EXTINGUISHER
MAINTENANCE	DO NOT USE IN ENCLOSED AREAS WHERE SUPPLY OF AIR IS LIMMITED	WATCH FOR CLOGGING OF NOZZLES. REPLACE GASKETS IF NOT TIGHT. CHECK FIT OF LEAD STOPPER AND LEVEL OF ACID. CHECK CONDITION OF SODA. IF CAKED REPLACE. TAKE CARE NOT TO INJURE LEAD LINING.	SPECIAL -- SEE PLATE ON EXTINGUISHER

PROPER AND EFFECTIVE USE OF FIRE EXTINGUISHERS

As a safety precaution, fire extinguishers are placed in theatres to be used solely in cases of emergencies that might arise.

Common sense, as well as scientific use of fire extinguishers in such emergencies, are important, as portable extinguishers are the first line of defense in fighting fires; in case of fires, usually it is best to call your nearest fire station, but where a small fire occurs, it should be the duty of some of the theatre personnel to know:

A. The location of nearest fire extinguisher.
B. The proper use of extinguisher.

Listed above are types of extinguishers.

PRACTICAL PLACING OF FIRE EXTINGUISHERS

WHERE TO PLACE portable fire extinguishers so that they may be most helpful rather than completely useless, because access to them has been cut off by fire, is the subject of a bulletin issued by the Safety Research Institute, New York. Following are the principal suggestions:

For normal fire hazards, extinguishers should be so placed that at least one large or two small ones can be reached by traveling no more than 50 feet from any point.

In mounting on columns or walls, with hangers, brackets or shelves as supports, the tops of easily handled units should not be more than 5 feet from the floor; with heavy units, this distance should not exceed 3½ feet.

All extinguisher locations should be checked at least once a day, and any obstructions found should be removed immediately.

RE-CHARGING

In most cities and towns, it is required that extinguishers be re-charged YEARLY. This should be done in cooperation with your local fire department, which is willing to cooperate in this important matter. Managers should check extinguisher locations occasionally. Make sure extinguishers are properly tagged and hung up. It is also well to CHECK THE NOZZLE OF THE EXTINGUISHER IN ORDER TO INSURE FLOW WHEN AN EMERGENCY ARISES.

FRONT HOUSE

Maintenance Manual

FRONT HOUSE

JOAN CAULFIELD ★ CLAUDE RAINS
"THE UNSUSPECTED"
ALSO "STORK BITES MAN" JACKIE COOPER
NP

THE FRONT OF THE HOUSE ...

THE THEATRE'S MERCHANDISING SHOWCASE!

FRONT HOUSE Maintenance

MARQUEE MAINTENANCE

Your marquee is an important electrical advertising device and should be checked frequently for broken or burned out tubes, transformers or dead lamps.

When you see a piece of tubing broken or burned out, switch off that section of the marquee and call your Maintenance Department. They will see that a qualified service man removes the tube or tubes and installs jumpers in the removed section.

After this has been done, this section of the marquee can be switched on and will burn except for the unit being repaired.

FAILURE TO FOLLOW THIS PROCEDURE MAKES MORE COSTLY REPAIRS NECESSARY. If the signs are left burning with the defective or burned out units for any length of time, it will cause the transformer of other tubes on that circuit, also the high tension cable, to burn out. Transformers are expensive and difficult to obtain.

If you should discover an electrode arcing in its housing, shut off that section of the marquee and call your Maintenance Department immediately.

Particularly after a bad rain, snow or wind storm a thorough check should be made of your marquee as these elements are generally responsible for neon tube failures. Most marquees are now lighted with Neon tubes behind the attraction panels. Very little trouble occurs in this area as the tubing is protected from the elements. However, if a dark section appears, do not fail to notify your Maintenance Department immediately.

The roof of the marquee and the drains should be checked periodically. Do not allow debris to accumulate on the roof and clog the drain as this will cause leaks in the ceiling and short circuit wiring furnished for your ceiling lighting.

Be careful that banners attached to the signs are so secured that they do not blow on the signs and break tubing.

When changing copy on attraction panels be very careful shifting ladders or dropping letters as this is a big reason for Neon replacements.

If your sign has a flashing lamp border, check carefully the section of the border to see that all circuits are flashing. Do not allow burned out lamps to remain as they take away the effect of the chaser border. Never leave a lamp socket without a lamp - socket must have a lamp at all times, whether or not it is a good one.

Do not allow unqualified people to handle any electrical connections on your marquee. IT IS HIGH VOLTAGE AND DANGEROUS.

SIGNS

Check your vertical signs and marquees to make sure that all turn-buckles, hanger rods, struts and holding bolts are free from rust and are safe. The bolts which transmit the load from the steel of the marquee to the hanger rods or chains should be checked with a wrench once a year at least to make sure they are holding. These bolts are sometimes under the roof of the marquee and hence are seldom checked; they may become rusted due to an invisible leak in the roof. The inside of a bolt may rust without showing outside; therefore, it is necessary to use the wrench test. If necessary, a sign company should check such points. THIS SHOULD BE DONE THROUGH A REQUISITION FROM YOUR MAINTENANCE DEPARTMENT.

Marquees and signs should be painted at least once a year. Glass and light troughs should be cleaned periodically. Do not allow a heavy accumulation of snow on marquee roof. Use petroleum jelly sparingly on letter troughs to allow free handling and prevent freezing during cold weather.

Ladders should be kept in good repair at all times, and at least one coat of paint or oil should be applied each year to protect them against the elements.

TICKET MACHINES:

USING A SMALL PAINT BRUSH, KEEP THE KNIFE SECTION FREE FROM TICKET DUST. THIS SHOULD BE DONE BEFORE USE EVERY DAY.

Remove all accumulated ticket dust from inside the case at least once a week.

Put one drop of kerosene on each ticket flap once a week.

Do not polish the top plate, or if you insist on it being polished, cover each flap with scotch tape and remove when finished. One ticket flap clogged or corroded by the use of metal polish can ruin the timing of accurate mechanism, causing expensive repair.

TICKET FLAPS SHOULD BE ON MACHINES AT ALL TIMES.

On electric models, fill the oil or grease cups on motor once every two months.

Check motor brushes every three months and clean carbon dust from motor armature.

If your ticket machine fails to operate or if you have any electrical or mechanical trouble, PULL OUT THE WALL PLUG AT ONCE. This may prevent a burnt out motor. If the ticket machine fails, DO NOT PERMIT UNAUTHORIZED PERSON TO ATTEMPT REPAIRS. ADVISE YOUR MAINTENANCE DEPARTMENT AT ONCE.

CARE OF TICKET MACHINES

1. Brush knife section thoroughly every day with a SMALL SOFT BRUSH.

2. Clean out accumulated ticket parts inside the ticket case weekly or oftener if necessary.

3. Put a drop of kerosene on each tickdt flap weekly or oftener if necessary.

4. If machine flap is lost or broken, be sure to put a strip of scotch tape over opening to prevent injury to patrons. BE SURE TO ALLOW A SMALL OPENING FOR TICKET TO COME THROUGH. REPLACE FLAP AS SOON AS POSSIBLE. It might be well to have a few extra flaps on hand in case of emergency.

5. Replace flaps when they show wear.

6. Make sure that ticket flaps are not fastened too tight, as this will prevent tickets from coming out.

7. Don't polish top of ticket machine unless you first cover all ticket flaps with scotch tape. PLEASE REMEMBER - METAL POLISH CAN RUIN THE TIMING OF ACCURATE MECHANISM WHICH CAN PROVE COSTLY.

8. If electrical trouble develops, pull out electric plug promptly.

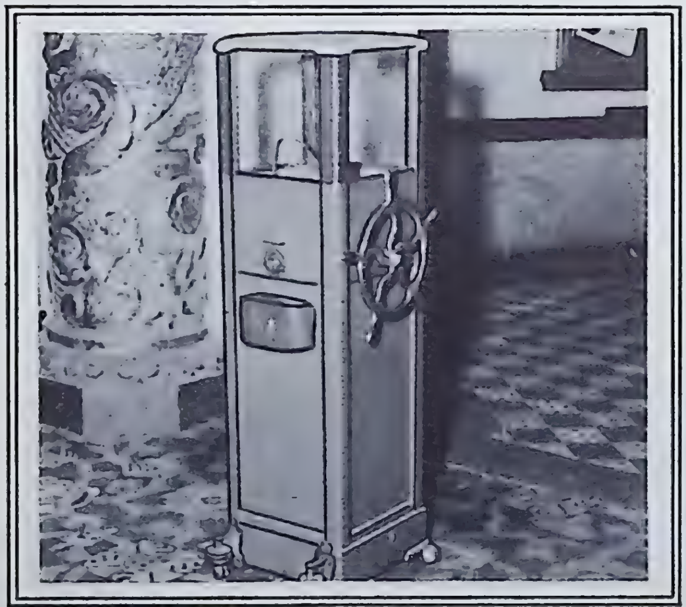
9. Knives do not need sharpening. They are all self sharpening.

10. If knives do not cut tickets, remove knife and clean underneath the knife bed.

11. If knives become rusted, clean with oily rag.

12. If tickets start ripping in center, check for improper threading of tickets. Make sure hole in tickets is over the center pin.

13. Fill grease cup on motor switch vacuum ONCE A MONTH.



CARE OF TICKET CHOPPERS

A ticket chopper is a very important psychological factor in the minds of patrons who go into theatres.

After the purchase of a ticket, the patron graciously approaches the ticket taker and chopper. Both must create a good impression - the ticket taker with his pleasant "thank you", and the ticket chopper by giving an impression of cleanliness and attention.

The glass should be polished daily, as well as the metal edgings, and last, the entire appearance of the ticket receptacle must look neat and attractive at all times.

Where ticket choppers are still in use, they should be given monthly attention in the form of little oiling in spots designated by manufacturer. It is imperative that:-

1. All tickets be removed daily. They should be thoroughly soaked in water so as to prevent the matching up of tickets.

2. In winter, it is also practical to burn old ticket stubs daily.

MARQUEE LETTERS

Letters should be stored in proper racks with separate section for each denomination.

The best method to change signs is to use two A-ladders with plank thrown across. This obviates the necessity of resting ladders against the sign and hanging onto or standing on channels.

Regular painting of galvanized sign letters is desirable not only for the sake of appearances but also to prevent rust and deterioration.

The proper maintenance of marquee letters is a matter that requires considerable attention.

Your marquee is the show window of your theatre; therefore, make sure that marquee letters are properly and alphabetically put away. By doing so, you will avoid breakage and unnecessary replacement expense.

Battered, unpainted, poorly maintained letters in your marquee create a bad impression in the minds of your prospective patrons.

BOX OFFICE

A well equipped box office should contain:

A. Draft protector mouthpiece.

B. A practical window shutter in front of your ticket machine so that it can easily be opened and closed, thereby keeping out the cold air in the winter, as well as protecting the cash and tickets. It is well to keep in mind that this window shutter should have a locking device to insure the protection of box office equipment and also to eliminate vandalism, and damaging of ticket machine.

C. Burglary signals or some quick method of signaling Manager's office in case of an emergency is important.

D. Proper and attractive lighting facilities are essential rather than dark unattractive box offices.

E. Proper and out-of-sight handy drawers for bills is important and should be given consideration.

F. Venetian blinds or attractive curtains will create a homey atmosphere in box offices.

G. Heating and cooling facilities are essential for the comfort and convenience of the cashier. A cheerful appearance on the part of cashier is conducive to good business.

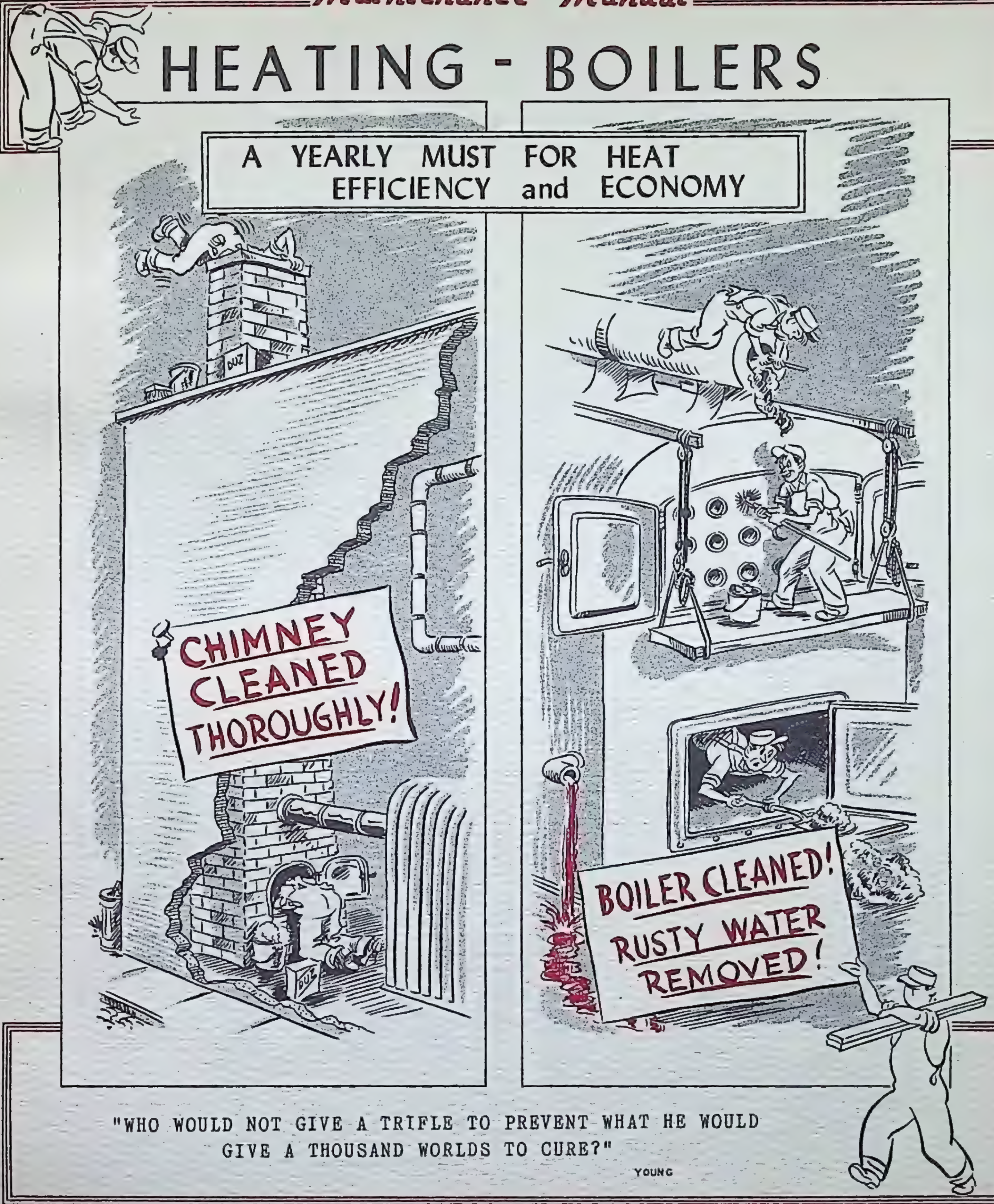
H. A light comfortable chair.

HEATING — BOILERS

Maintenance Manual

HEATING - BOILERS

A YEARLY MUST FOR HEAT EFFICIENCY and ECONOMY


DUZ
CHIMNEY CLEANED THOROUGHLY!
DUZ
BOILER CLEANED! RUSTY WATER REMOVED!

"WHO WOULD NOT GIVE A TRIFLE TO PREVENT WHAT HE WOULD GIVE A THOUSAND WORLDS TO CURE?"

YOUNG

Hints on Care and Operation of HEATING SYSTEM

There are a few rules for economical heating maintenance and operation which may be applied to all heating systems.

Often a heating system and its auxiliaries are neglected. It is essentially a piece of mechanical equipment and deserves the same care and attention as a motor car.

Before starting your boiler, the following procedure may be of some help to you.

a. Make sure that the main steam valve located on top of your boiler is in an open position.

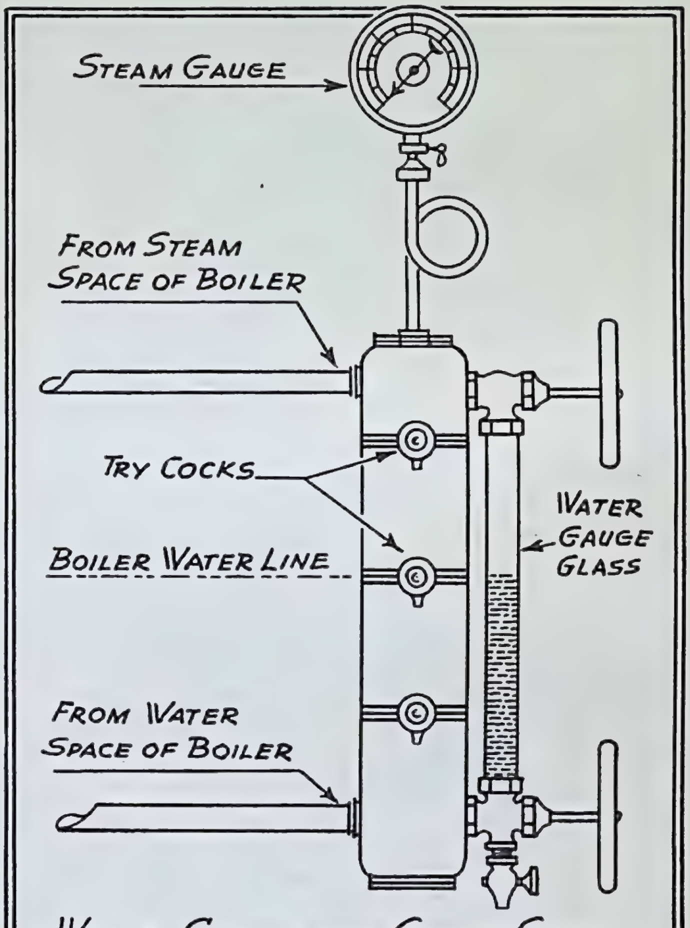
b. Make sure that the return valve located in the rear of the boiler is also opened.

c. Check the water in the boiler. It should be at least 3/4 of a gauge glass full. This can be determined by testing the try-cocks on the water column located on the side of the boiler near the front.

d. Make sure dampers are in an open position. These dampers may be found in the rear of the boiler and in the flue pipe.

e. Open ash pit door located in the bottom part of the boiler in the front section. On most coal burning boilers, there is a damper regulator installed on the top front section of the boiler. There is a lever arm on this regulator which is connected by means of a chain to the front ash pit check door and a check damper in the rear section of the boiler. Make sure that these chains are connected so as to insure efficient operation.

f. Make sure that all grates are in good condition, that they are not warped or broken and that the shaker arm assembly which operates these grates is in free working order.



Water Column and Gauge Glass

g. If the boiler is equipped with automatic feed water regulator which would be located on the water supply line to the boiler, test this regulator to make sure it is working properly. A simple test may be made by drawing off some of the water from the boiler until the automatic feed water regulator operates.

h. Spray a thin layer of coal over the grate area. Cover this coal with paper and light wood and then ignite. Close fire door and allow contents to burn rapidly. When burning well, throw on more coal and stand by to make sure that everything is in working order when the boiler starts to steam.

i. CAUTION: IF TWO BOILERS ARE TO BE USED, THE ABOVE PROCEDURE SHOULD BE FOLLOWED FOR BOTH BOILERS. IF ONE BOILER IS TO BE USED WHERE THERE ARE TWO BOILERS, BE SURE TO CLOSE THE MAIN STEAM VALVE AND THE MAIN RETURN VALVE ON THE UNUSED BOILER. If oil is used as a fuel, the following instructions should be adhered to in addition to the above recommendations for the boiler.

OIL-BURNING EQUIPMENT

a. Make sure the oil burner is in working condition, that it is clean and properly oiled before putting into operation. If in doubt, call your Maintenance Department.

b. Check fuel tank to ascertain that you have enough oil.

c. Set thermostat located in auditorium to temperature desired, return to boiler room and throw in operating switch.

d. If the oil does not ignite immediately, shut off the switch and call your Maintenance Department. DISREGARD OF THIS WARNING MAY LEAD TO SERIOUS RESULTS.

e. Your pressure-stat which is located on top of the boiler adjacent to the steam gauge should be regulated to shut off the boiler and re-start the boiler at the proper pressures. The setting on the pressure-stat should be made by your fireman or the Maintenance Department.

f. Oil burner installations are equipped with the following safety devices: a pressure-stat which controls the amount of steam pressure predetermined for the boiler, a low water cut-off connected to the water column which will automatically shut off the oil burner in the event of low water, a stack control switch which will shut off the oil burner in the event of an overheated chimney or back fire from the burner. This is located in the rear of the boiler in the flue passage or on the front flue passage of the boiler.

g. On boilers where heavy oil is used as a fuel, a daily check should be made inside the fire box in front of the firing nozzle to remove any accumulation of carbon which forms at this point. CAUTION: FAILURE TO REMOVE THIS CARBON WILL EVENTUALLY CAUSE THE BURNER TO BACK_FIRE AND DESTROY YOUR OIL BURNER EQUIPMENT.

HOW TO REDUCE HEATING LOSSES.

To reduce heating losses to a minimum:

a. Check all unnecessary openings to the outside air, such as poor weatherstripping, broken windows, loose window frames, roof and skylight vents, etc. and make sure that they are sealed off.

b. Eliminate all unnecessary ventilation. Do not try to supply enough ventilation for an audience of 2000 when there are only a few people in the theatre.

c. Determine the hours that the heating system should be started and shut off. This, of course, will be governed by the temperature outside.

d. If your heating plant supplies the theatre and a group of stores or office building, try to regulate this system so that you will only heat the office building and stores, and not overheat your theatre when it is closed to the public.

e. See that your entire heating system responds rapidly when steam is turned on.

f. If you find some radiators hard to heat or sluggish, report this to your Maintenance Department.

g. Do not obstruct radiators or prevent free circulation of air around them, as this seriously reduces the heating capacity of the radiators.

h. Air coils or wall radiators are used for heating stage section. Keep these clear of scenery or any obstructions.

i. Do not overheat the theatre to correct a local condition. When any part of the heating system is not functioning properly, call your Maintenance Dept.

j. Replace broken asbestos on steam pipes and on the boiler.

k. Leaky radiators and leaky valves should be repaired immediately.

l. Your grates will last indefinitely provided you keep the ash pit clean and free from ashes and clinkers.

m. Be sure the automatic arrangement for shutting the boiler room door is in working order at all times.

n. Make sure that the air intake and exhaust system to the boiler room are working properly.

o. Be sure to close off outside air dampers on this system at night to prevent freeze-ups.

RUBBISH AND WASTEPAPER

We do not recommend the burning of paper or rubbish in your boilers. However, it is recommended that a metal bin be erected outside your building to store all kinds of refuse. Try to arrange for a daily pick-up of all rubbish.

CARE OF HEATING SYSTEM AND BOILERS

There are two kinds of boilers most commonly known in connection with heating: the Cast Iron Section Boiler and the Horizontal Tubular Boiler.

CAST IRON SECTIONAL BOILERS

a. Before shutting down, washout well with sal soda. Use about 10 lbs. of sal soda per boiler. Dissolve in a bucket of warm water. Remove safety valve or some other convenient connection and pour into boiler. Allow it to boil for several hours. Next morning blow off about two gauges or until water just shows in bottom of glass. This should be repeated every day until water blows off clean.

b. Remove ashes from ash pit and grates. Be sure that ashes are removed clear up to the rear wall of ash pits and grates.

c. Open all clean-out doors and thoroughly brush clean for full length of boilers.

d. Clean out up-take from boiler to chimney. There is usually a door here for this purpose.

e. Open clean-out door at base of chimney and remove soot.

f. Main steam valves should be packed.

g. Water glasses should be renewed if dirty or leaky. When new glasses are renewed be sure to use new washers.

h. Fusible plugs should be renewed.

i. All broken parts and fittings on boiler should be replaced, such as broken wheels on valve stems, and ash pit door parts, etc.

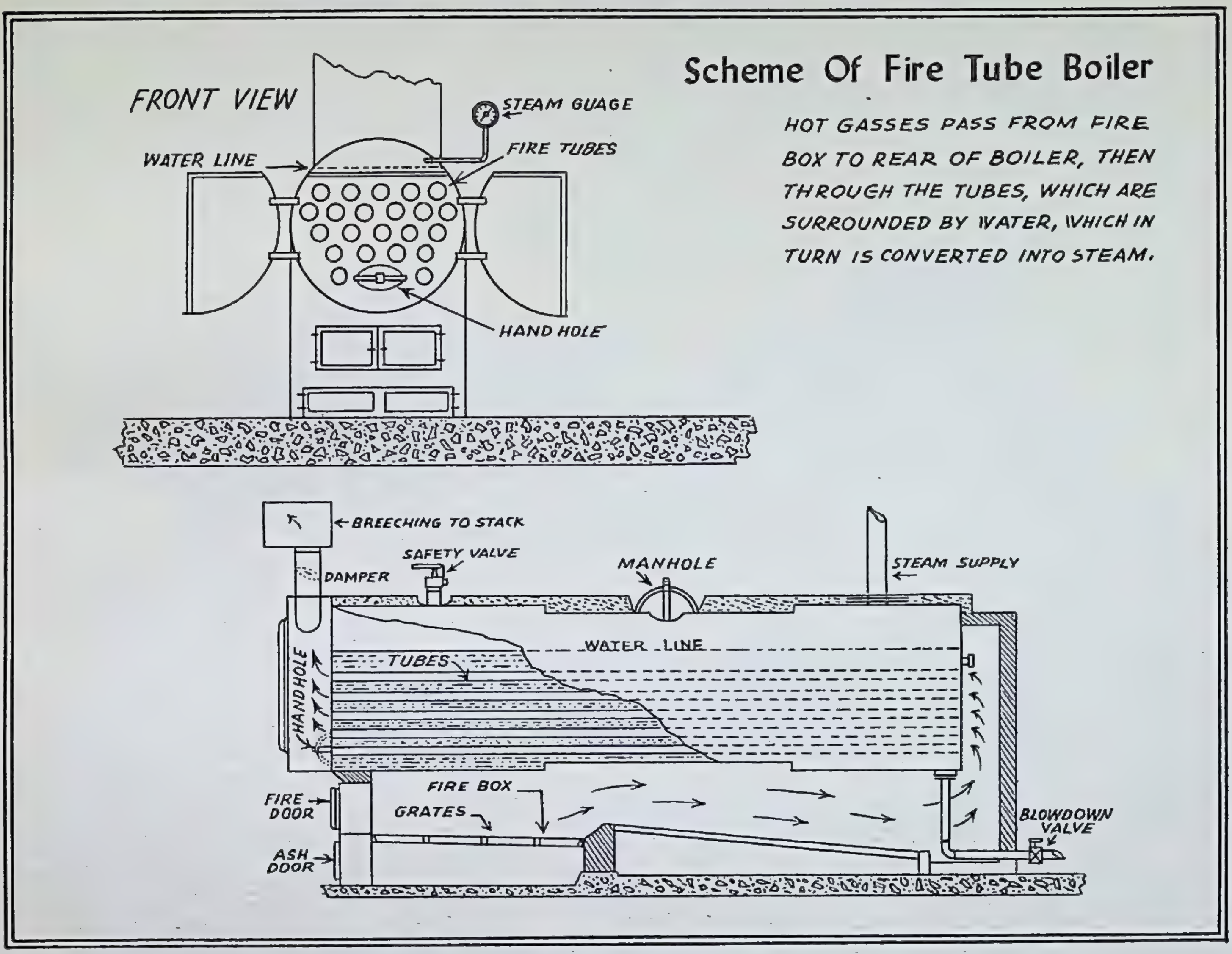
j. Paint boiler base and front with black asphaltum.

k. Uptake to chimney should be painted to prevent rusting. Use a heat resistant, black graphite paint for uptake.

l. Before leaving boiler, fill with water. It is very dangerous to leave this type of Boiler empty since someone may build a fire of paper rubbish, etc. and these sections are very easily cracked.

m. The Manager should satisfy himself that the boiler has been thoroughly cleaned. He should provide his men with several good brushes and see that they use them; also a good portable light should be provided. By having someone hold this light in the clean-out doors at the rear of the boiler and opening front clean-out doors it is possible to look through the interior of the boiler and see its condition. The importance of cleanliness around a boiler cannot be emphasized too much. According to the best authorities on the subject, a deposit of soot 1/32" deep will cause a 10% heat loss while a deposit of 1/16" will cause a 25% loss.

HORIZONTAL STEEL RETURN TUBULAR BOILERS



Scheme Of Fire Tube Boiler

HOT GASSES PASS FROM FIRE BOX TO REAR OF BOILER, THEN THROUGH THE TUBES, WHICH ARE SURROUNDED BY WATER, WHICH IN TURN IS CONVERTED INTO STEAM.

FRONT VIEW
STEAM GUAGE
WATER LINE
FIRE TUBES
HAND HOLE
BREECHING TO STACK
SAFETY VALVE
DAMPER
MANHOLE
STEAM SUPPLY
WATER LINE
TUBES
HANDHOLE
FIRE BOX
FIRE DOOR
GRATES
ASH DOOR
BLOWDOWN VALVE

a. The same general rules on cleanliness should be observed. In this type of boiler the tubes should be scraped, and front flue sheet and doors should be brushed down. Ash pit, firebox, combustion chamber and back connection should be thoroughly cleaned out. Rear head up to back arch should be swept clean. Underside of boiler should be swept clean up to closing in line on each side. Renew fusible plugs. Examine brick work for air leaks, also fire brick lining in fire box. It is very important that this be taken care of to prevent fire from getting at the foundation walls of the boiler.

b. Draw water off boiler and remove man hole and hand hole plates. Get a good 3/4" hose and wash out interior of boilers. Scrape around manhole and hand hole openings and paint. When putting covers back on, use new gaskets covered with a mixture of graphite and oil.

c. If boiler is located in a dry place and no fire is to be built, it may be kept empty. In this case keep the manhole and hand hole plates off and allow air to circulate through. If the boiler is located in a damp place, close up by putting on manhole and hand hole plates. Fill with water to the top of glass. Paint tube heads front and rear. All hand hole and manhole plates should be made tight and checked periodically for leaks.

d. Grates should be examined, and if badly burned or warped, they should be replaced.

e. Uptake from boiler to chimney should be examined for air leaks. These are most likely to be found in joints and at doors. They should be closed up with fire cement. If you have been experiencing trouble with poor draft, this should be looked over carefully. All the air that goes up the chimney should be drawn through ash pit doors and over the fire box. Any leaks in boiler section, chimney, etc., short circuits this air and reduces the draft.

f. All radiator valves on system should be left open and water allowed to return to the boiler. There is usually a draw-off valve on the lowest point of return lines at rear of boiler for the purpose of draining water out of heating system. This valve should be opened, and all the rusty, dirty water that lodges in the low points of heating system allowed to drain off.

g. If the system is equipped with a vacuum or condensation pump and receiver, this equipment should be looked over. Examine and clean motor, look over pump and repack glands. Tighten up all foundation bolts, drawing up evenly all around. Remove strainers and give them a thorough cleaning, replacing wire mesh if broken. Paint equipment and cover up until it is to be used.

h. Oil burners and pumps should be gone over. All parts should be washed in kerosene. Worn and broken parts should be replaced. If the burner has not been working correctly, an expert on this type of burner should be called in to look it over. It is foolish economy to try to operate with a poor burner.

i. All appliances on boiler, such as damper regulator, feed water regulator safety valves, dampers, etc., should be checked and put in proper condition.

j. Valves and flanges around heating system and pipe lines should be made tight. It is good practice to have the man operating boilers go over the system just before it is shut down and mark leaky valves and flanges so that they may be repacked when the system is shut down. If there is a sump pump cellar drainer here because of water leaking into the boiler room, make sure that it is in good condition.

k. Last, but by no means least, clean the boiler room and arrange ash barrels, coal bunkers and fire tools in an orderly way. Neatness and systematic methods promote safety and efficiency in the boiler room just as they do in other places. Your boiler and heating equipment perform an important and necessary duty. Satisfactory and economical results in the system are largely dependent upon the care and attention given it. Allow dirt and ashes to accumulate in and around your boiler, cram it full with all kinds of rubbish, neglect the sump pump in boiler room, allow water to flood it, and you will have the same sloppy results with your heating.

l. Take all steam traps apart before the heating season starts and see that they are clean. Inspect all valves on the main steam lines, branch lines and radiators and repack if necessary.

m. Where boilers are installed on a level lower than the lowest basement level, it is necessary to pump out seepage. This pump should be inspected often to be sure it is in working condition. If the pump does not work due to seepage, water may rise high enough to put out the fire and cause considerable damage.

n. Check air vents on the radiators vents and aerofin coils to be sure that they are in working condition. Air or water left in the system and not released through these valves, will cause the system to function improperly.

o. If at any time the fireman notices the water low in his boiler, he will first test his lowest gauge cock to see if water flows. If no water flows from this gauge cock, he will immediately throw damp ashes on his fire and close all drafts. Never allow cold water to flow into a boiler when the water is very low as this is apt to cause the boiler to crack.

p. If at any time the fireman notices that the steam pressure on his steam gauge records a pressure higher than the release valve is set for, he will immediately dampen down his fires and, at the earliest possible time, have his release valve repaired and tested.

q. Unless proper treatment is added to the water in your heating system, you are wasting oil or coal to heat the scale which forms on the boiler shell due to impurities in the water. Rust and sediment also hardens and clogs your return pipes. It is recommended that you treat the water in the boiler with a compound and run some of the water through the blow-off valve at least once a week in order to clean out the rust and sediment.

r. You also lose a considerable amount of heat if the flue passage of the boiler is leaking enough to allow the gases to short circuit the flue, and go out the chimney without doing the proper amount of work.

FOLLOWING ARE INSTRUCTIONS FOR BOILER TREATMENT TO BE HANDLED THROUGH THE MAINTENANCE DEPARTMENT.

Water treatment can be introduced into the boiler by taking off the safety valve or by opening pipe on top of water column.

Amount of treatment to be used for every 1,000 square feet of radiation:

1 qt. for 1,000 sq. ft. of radiation
2 qts. for 2,000 sq. ft. to 3,000 sq. ft. of radiation.
3 qts. for 3,000 sq. ft. to 5,000 sq. ft. of radiation.

These amounts should be fed every week for at least four weeks, longer if the condition is bad.

The boiler should be washed out once a week before a new dose is introduced.

After the boiler is clean, use 1 pt. to every 1,000 sq. ft. radiation once a month to prevent any further scale or corrosion. At the end of the heating season, put in 1 qt. of treatment to every 1,000 sq. ft. of radiation. Fill the boiler to the top with water. This will prevent all rust and corrosion actions during the summer months. About two days before putting the system back into use, build a slow fire under the boiler so the water will just boil. Then drain off the water. Wash out the boiler. The boiler will then be as clean and free from rust and corrosion as the day it was installed.

To figure approximately the sq. ft. of radiation of the boiler, multiply the number of radiators in the building by 20.

Indirect Heaters, Blowers, Coils, etc.

Clean heating coils and fins thoroughly.

Check all fittings and piping around the coils.

Check insulation inside housing and be sure that the dampers, louvres, filters, etc., are in good condition.

Be sure the blower and motor are tightened down to foundation and see that the belts are in good condition and adjusted to the proper tension to prevent unnecessary wear.

Remove old grease or oil from the motor bearings and blowers, and lubricate with fresh oil and grease.

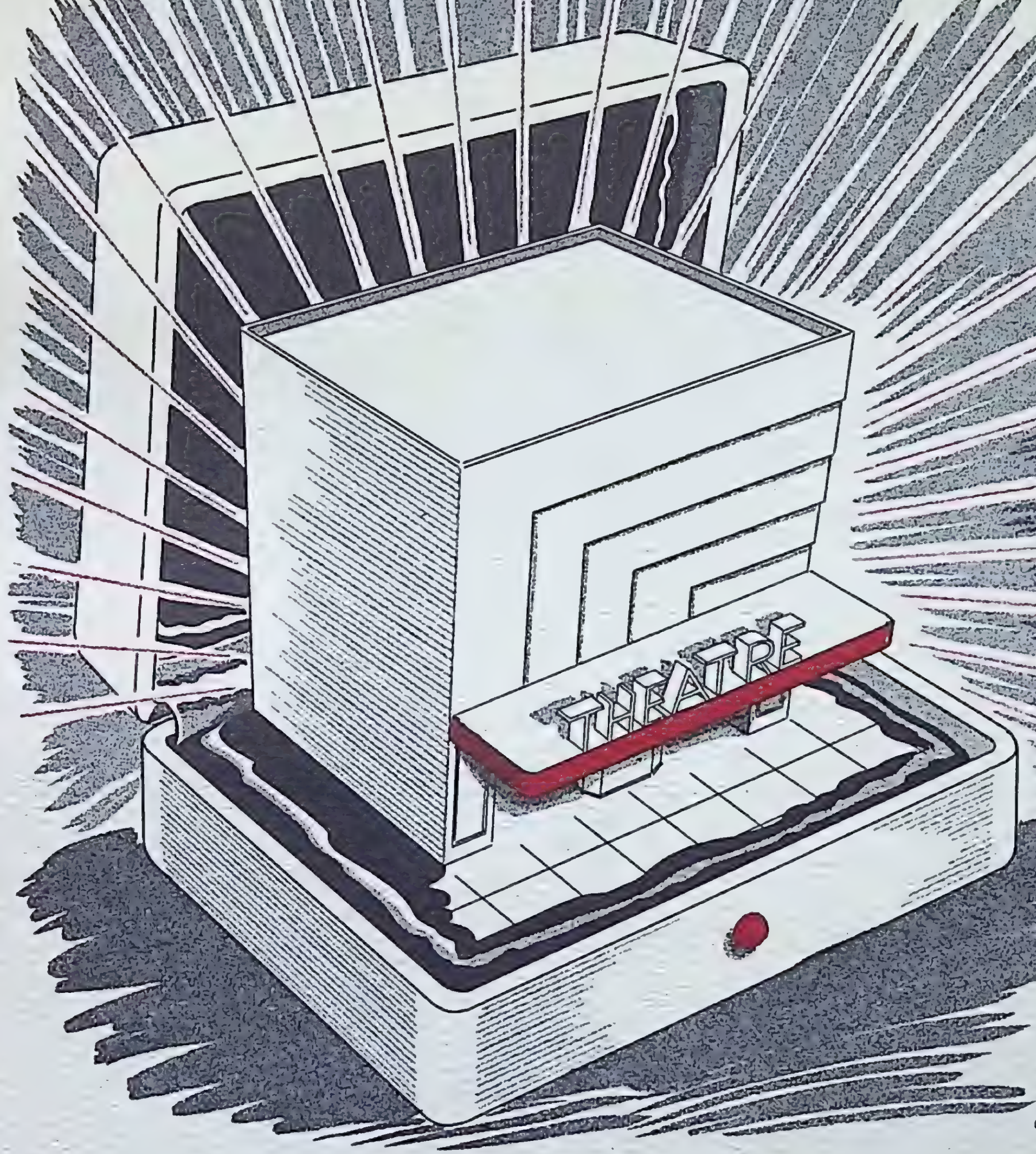
Be sure there is proper alignment of blowers and motors and watch for defects in the bearings by checking them when equipment is in operation.

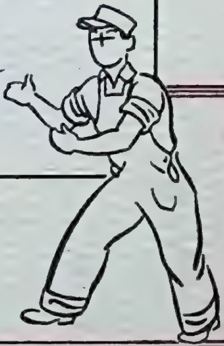
Check all wiring and electrical equipment, also connections to motor and starting switch.

HOUSEKEEPING

Maintenance Manual

HOUSEKEEPING





GOOD HOUSEKEEPING . . . A VIRTUE OF EVERY GOOD MANAGER!

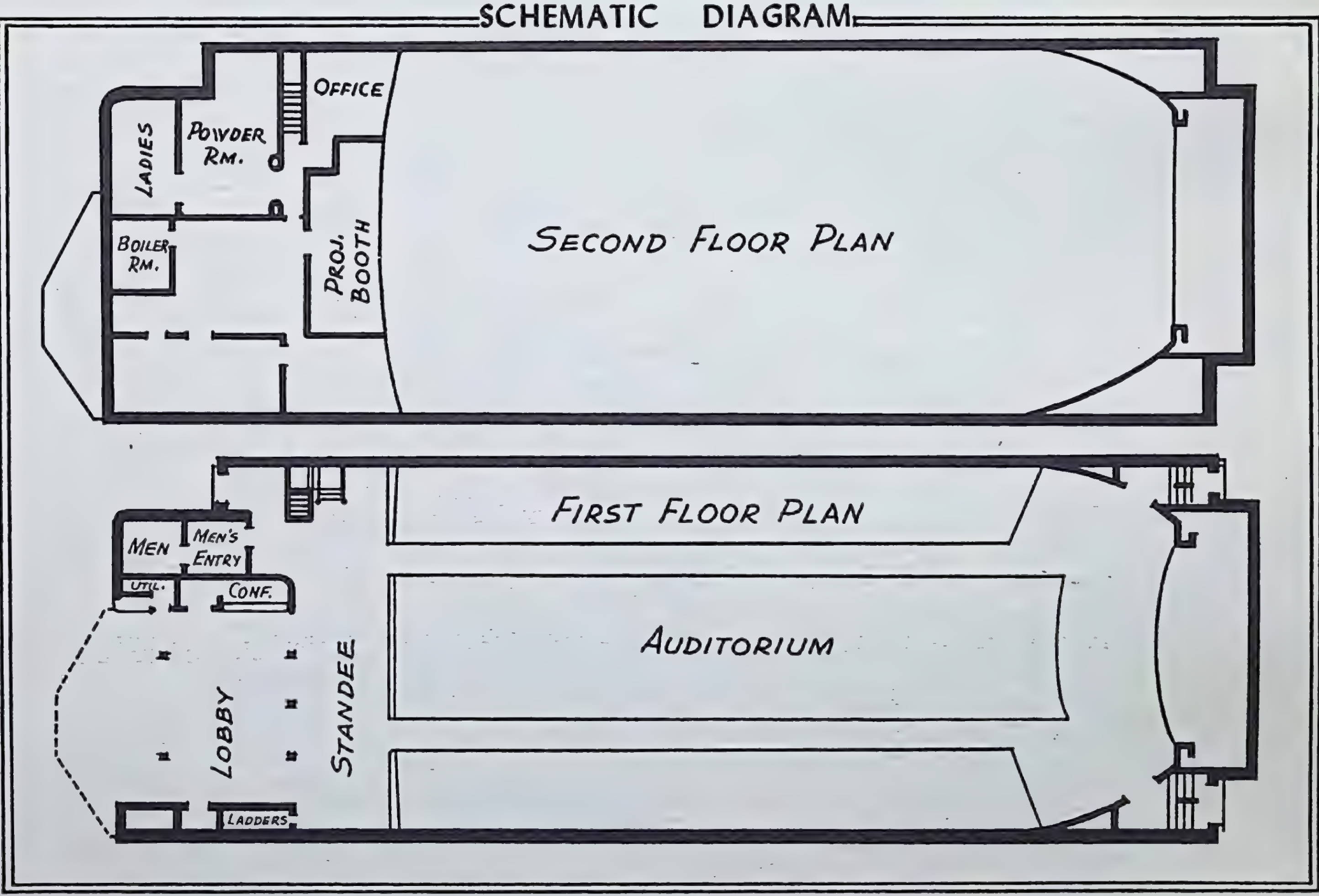
HOUSEKEEPING

We cannot emphasize too strongly the importance of PROPERLY CLEANING YOUR THEATRE. Movie patrons are quick to choose theatres where good housekeeping is prevalent. This applies to neighborhood houses as well as theatres in key centers. Bad toilet odors, gum covered floors and carpets, dusty seats, electric fixtures, fans, walls, and finger spotted candy display cases will entail a loss of prestige, as well as business for your theatres. Managers should make GOOD HOUSEKEEPING A MUST in theatre operations. Box offices that are NOT kept neat and clean will bring adverse criticism. Methodical planning should be undertaken in organizing an efficient staff. The manager should spend a reasonable amount of time daily in carefully checking to see if his theatre has been properly cleaned. This policy WILL PAY DIVIDENDS AND BUILD GOOD WILL. Waste of cleaning materials will be cut to a minimum if the manager follows through daily on his cleaning situation.

ORGANIZATION PLAN

A. If your respective theatre hasn't a schematic diagram, we recommend that you have one made up. After you have an original, a few duplicate copies can be made. Such a plan must show all parts of the theatre.

SCHEMATIC DIAGRAM


Office
Ladies
Powder Rm.
Boiler Rm.
Proj. Booth
Second Floor Plan
First Floor Plan
Men
Men's Entry
Util.
Conf.
Auditorium
Lobby
Standee
Ladders

B. Would also recommend an enlarged schematic plan which should be framed and kept in Manager's office as a means of properly instructing new cleaners.

C. With a clear plan of your entire theatre, you should assign a specific cleaner to a specific location.

D. As an example: Cleaner #1 will have charge of Section A - Cleaner #2, Section B - Cleaner #3, Section C. By such systematic procedure, your entire theatre will be properly and systematically covered; furthermore, by delegating specific sections to cleaners, you will have an accurate check on the way the job is being done by each employee. Therefore, you can easily place the responsibility of inefficiency and carelessness.

A weekly or at least a semi-monthly meeting with your cleaners will greatly improve your cleaning staff. They should be given proper instructions in:

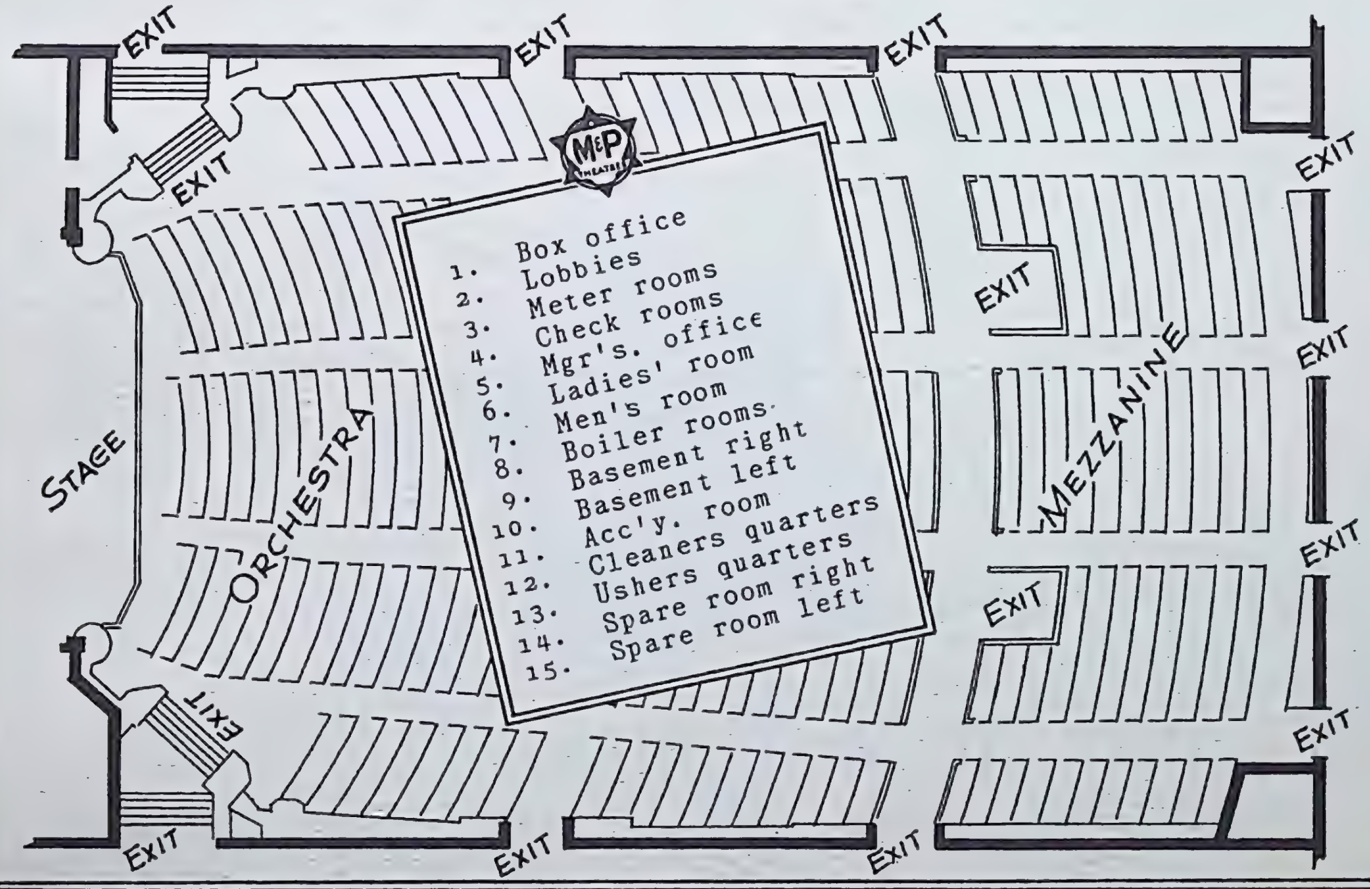
1. Efficiency

2. Economy in cleaning materials, lights, etc.

Wastes in these departments can run into thousands of dollars.

If there is a question of cost involved in having a schematic diagram made, we recommend the use of a seating plan which has been made for each theatre in the M. & P. circuit. With such a plan, a Manager can add on various rooms and specify clearly what location, or section, or aisles, or lobbies, is assigned to specific cleaner. SEE CHART.

TYPICAL M & P SEATING PLAN


EXIT
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EXIT
EXIT
STAGE
ORCHESTRA
MEZZANINE
M&P THEATRES
1. Box office
2. Lobbies
3. Meter rooms
4. Check rooms
5. Mgr's. office
6. Ladies' room
7. Men's room
8. Boiler rooms
9. Basement right
10. Basement left
11. Acc'y. room
12. Cleaners quarters
13. Ushers quarters
14. Spare room right
15. Spare room left

WEEK END CLEANING

In setting up your cleaning schedules, it would be well to keep in mind that added cleaners might be necessary after busy week ends. On Tuesday through Friday with time off, naturally, your staff would have to be re-arranged.

ON CONTINUOUS DAYS

Careful and intelligent care must be used in cleaning on continuous run days.

A. All toilets should be given a thorough going over, including sanitation.

B. All lobbies should be cleaned in a thorough manner.

C. Rear of Orchestra or stand-up space, and aisles, SHOULD BE GIVEN A GOING OVER.

D. No sweeping should be done, but papers of all sorts should be picked up with as little disturbance to patrons as possible.

Patrons will not mind the cleaner doing a pick up job; but they do resent a vacuum sweeping job being done while watching a movie. Therefore, MANAGERS MUST CAUTION THE CLEANERS TO BE DISCREET IN CLEANING WHILE PATRONS ARE PRESENT.

CHART OF INSTRUCTIONS

We recommend that each theatre arrange for a glassed-in-chart, approximately 8 x 12, with the following copy of DONTS to be placed in all cleaning supply rooms where cleaners assemble.

CLEANERS

YOUR MOTTO - A Place for Everything, and Everything in its Place!

PLEASE

IN THE INTEREST OF GOOD HOUSEKEEPING AND ECONOMY:

DON'T

A. Turn on house, lobby, and exit lights - USE ONLY CLEANERS LIGHTS.

B. When cleaning ladies', men's, and other rooms - DON'T FORGET TO TURN LIGHTS OFF WHEN FINISHED.

DON'T

Waste cleaning materials - they are COSTLY.

DON'T

Throw brooms in a corner; they must be HUNG UP PROPERLY IMMEDIATELY AFTER YOU ARE FINISHED.

DON'T

A. Forget to ventilate theatre, basement, and out-of-the-way rooms REGULARLY.

B. ON WARM DAYS, open up exit doors - THE HIGHER UP THE BETTER, as this will minimize the entrance of FLIES, INSECTS, and RODENTS.

DON'T

Forget to properly sanitize ladies' and men's rooms, toilets, urinals and toilet seats DAILY.

DON'T

Forget to remove all ice and snow from exits and sidewalks. Use salt and sand when necessary so that exit doors will open easily.

(CHART CONTINUED ON THE NEXT PAGE)

(CHART CONTINUED FROM PREVIOUS PAGE)

DON'T

Be careless with metal polish, or allow it to spill over doors or walls. Screw cover on tightly when finished.

DON'T

Neglect furniture - clean and move occasionally; also clean carpet underneath furniture.

DON'T

Forget to turn in ALL FOUND ARTICLES to Manager's office. THIS IS IMPORTANT!

DON'T

Allow rubbish to accumulate; it is combustible and breeds disease.

DON'T

FORGET ----- TO FILL UP PAPER TOWEL - TOILET TISSUE--and SOAP CONTAINERS DAILY.

Overlook the proper cleaning of:

A. Mirrors
B. Phone booths
C. Kick plates
D. Venetian blinds
E. Drapes
F. American flags
G. Clocks
H. Fans
I. Grilles
J. Radiators - (under and back)

DON'T

Forget to report to manager each day (ON SEAT FORM) a list of torn or broken seats.

DON'T

Waste water - it is METERED and COSTLY. Always shut off water promptly.

MAINTENANCE MATERIALS

It is the aim of the MAINTENANCE DEPARTMENT to supply our theatres WITH THE BEST QUALITY CLEANING MATERIALS AND EQUIPMENT. This also applies to paper towels, toilet tissue, etc. Such materials are costly. Therefore, it is important for the Manager to explain to the cleaners the proper use of such materials so that waste will be minimized.

The purchase of modern and most practical accessories is given a great deal of consideration so that greater efficiency can be accomplished with a minimum of strain.

SUPPLY OR CONTROL ROOM

Good theatre management recognizes the necessity of complete control of its various supplies. Complete control minimizes loss through waste, damage, inadequate storage space and unnecessary ordering of supplies which may already be on hand. Caution should be taken in the choice of a SUPPLY OR CONTROL ROOM BECAUSE here it is possible, at the outset, to eliminate all the difficulties that may beset us at a later period.

In order to systematically control the various supplies, lamps, etc., good judgment dictates that such items should be stored UNDER LOCK AND KEY. Access to this room or area should be available to a limited number of persons and in most instances preferably the manager and the maintenance man only.

It is recommended that a stage dressing room or other feasible area be designated for storage purposes. Within this a series of shelves or cabinets should be erected to effect an elementary system of storage of supplies, lamps, etc.- UNDER ADDITIONAL LOCK AND KEY. The room must be chosen with an eye to the following recommendations:

A. The room or area should be properly ventilated and free from dampness.

B. The area should be free from all electrical contacts, outlets, wiring, bus bars, etc.

C. Steam pipes or hot water lines running through a given area should not be considered as a suitable location. NOTE: (such pipes should be covered with asbestos.)

D. Walls considered for supporting anchored or nailed shelves or cabinets in basement and cellar areas must be scrutinized carefully, for such walls may be water-proofed. Where conditions of this nature exist and other space is unavailable, it is suggested that the erection of a book shelf type of storage space approximately four feet in height will suffice to eliminate any type of fastenings to these walls.

Cellar screen wire nailed or fastened to the framework of the above should be utilized as a practical covering for the following reasons:

A. It affords the management an instant spot check of supplies on hand.

B. To permit the constant circulation of air which will greatly reduce odors emanating from disinfectants, soap powders, and other related items.

C. In conjunction with the above, where a room with a solid type door is involved, a LOUVRE should be cut at a practical point in the door to effect the desired circulation of air.

Within the recommended room or area where space is available, provisions should be made to allow for the placement of metal barrels, or other type of metal enclosures, to accomodate paint supplies, theatre seat materials, etc.

Where lamps are planned for storage in the area or room in question, allowances should be made for proper spacing within the shelving section so that it will accomodate average size lamp cartons received by the theatre.

Adherence to the above recommendations will enable the management to facilitate proper storage of supplies and lamps, coupled with a systematic control of expenditures involved, which should eliminate guess-work when periods of requisitioning or purchases are in order.

PROPER USE OF BRUSHES AND BROOMS

Manufacturers of brushes frankly estimate that IMPROPER USE OF BRUSHES WILL REDUCE THEIR LIFE 33%. Such waste is astounding and could run into thousands of dollars, providing brushes are not given proper care. REMEMBER - hard use will never shorten the life of a brush prematurely; correct use, proper care, and proper storage (should be hung up) will increase efficiency and durability of brushes.

Managers should impress cleaners with the following:

BRUSHES THAT ARE PROPERLY PUT AWAY

WILL LIVE TO WORK ANOTHER DAY.

CLEANING POWDERS

In the ensuing pages, we have listed various powders supplied by the maintenance department. In most instances, instructions for its uses are given; in other words, if it is suggested that ONE CUP OF POWDER be used in a pail of water, this must be followed carefully. Each theatre manager should supply his cleaners with two or three metal or glass measuring cups (clearly indicating the amount of ounces, etc.) In no case should a cleaner use a handful or two of powder, or an old can or recepticle, but there should be a definite measurement of powders, purgall, deodorants, disinfectants, etc. EVERY ITEM SHOULD BE HANDLED ACCORDING TO MEASUREMENTS INDICATED BY MANUFACTURER.

In many instances, improper use will create a coating on the floor, too strong an odor, inefficiency in its accomplishment, plus an unnecessary waste of cleaning materials.

Proper Cleaning Quarters Set-Up

MOTTO - "A Place for Everything and Everything in its Place"

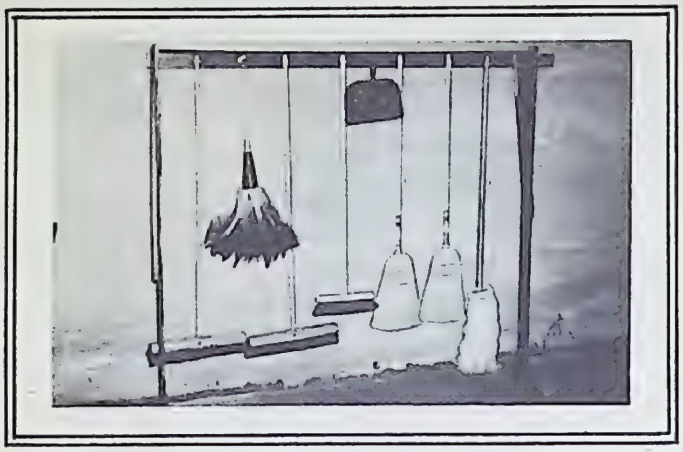


Photo showing proper way to hang up PUSH BROOMS - FEATHER DUSTER - SCRUB BRUSH - DUST PAN - CORN BROOMS & MOP

NEW CLOTHS
USED CLOTHS

Photo showing metal barrels for new and used cloths.

PAPER TOWELS
TOILET TISSUE

Photo of locked paper towel closet and toilet tissue closet - properly marked on the outside.

Photo showing inside of closet for toilet tissue and paper towels properly stacked.

Managers' Inspection Report

1. GENERATOR ROOMS:
   Check for ( ) obstruction ( ) cleanliness, etc.

2. BOILER ROOMS:
   Check ( ) combustible material ( ) cinders removed ( ) exits clear? ( ) ventilating fans neat and clean?

3. BOOTH:
   Check for: ( ) cleanliness ( ) carbon savers ( ) film in safety cans ( ) any wearing apparel and newspapers?

4. STAGE:
   General check on: ( ) cleanliness ( ) unnecessary waste of light ( ) lamps locked up and perpetual inventory ( ) are all spare rooms clean? ( ) is knife of sign attached to ventilator ropes?

5. USHERS ROOMS:
   Check for: ( ) cleanliness ( ) uniforms properly hung up? ( ) "no smoking" signs ( ) lockers in good shape? ( ) shoe shining material ( ) general appearance.

6. PARKING SPACE:
   Check on: ( ) general appearance ( ) proper lighting ( ) are exits clear? ( ) use of salt and sand in winter ( ) sign indicating theatre not responsible for loss or stolen articles in parking space - men on alert - is service good? ( ) are parking space men supplied with long range battery lights?

7. PIT:
   Check on: ( ) organs covered? ( ) pianos covered? ( ) is the pit cleaned regularly?

8. SEATS:
   Check on: ( ) are they in good shape? ( ) are they sprayed regularly? ( ) are they thoroughly cleaned or dusted at specific periods?

9. EXITS:
   Check on: ( ) do doors open easily? ( ) are passageways clear? ( ) are exit fixtures properly illuminated? - are fixtures o.k.? ( ) are panic bolts working properly?

10. FIRE ESCAPES:
    Check on: ( ) any obstruction? ( ) do they need painting? ( ) check for looseness of handrails, - rungs or stairs ( ) are they properly illuminated?

11. AUDITORIUM & BALCONY:
    Check on: ( ) are floors clean? ( ) are gum spots removed? ( ) condition of carpets? ( ) fans and light fixtures ( ) clocks dusted? ( ) are stairways and aisles clean and neat? ( ) are aisle lights clean and properly illuminated?

12. CANDY COUNTER:
    Check on: ( ) what is the general appearance? ( ) condition of stockroom. ( ) is popcorn properly stored? ( ) popcorn warmer in good shape? ( ) popcorn machine properly cleaned and oiled?

(OVER)

13. FURNITURE: - lobby, men's and ladies rooms:
Check on: ( ) general appearance ( ) is it properly cleaned and dusted? ( ) does it need re-upholstering? ( ) is it moved occasionally?

14. RADIATORS:
Check on: ( ) are they properly painted? ( ) check carefully for water noises ( ) are they clean underneath and back, also between sections?

15. CLEANERS ROOM:
Check on: ( ) are brooms and mops hung up properly? ( ) are cleaning cloths in metal containers covered? ( ) are paper towels and tissues properly locked up? ( ) are paints and brushes in metal containers?

16. MEN'S AND LADIES ROOMS:
Check on: ( ) condition of floors ( ) are bowls clean? ( ) drinking fountains ( ) are there any odors? ( ) is telephone booth clean and in good shape? ( ) paper towels ( )sufficient tissue paper? ( ) napkin dispensers ( ) condition of toilet seats ( ) are stalls rusty? ( ) do toilet doors have privacy locks? ( ) condition of plumbing? ( ) are scales working properly? ( ) lipstick and writing removed from walls and doors? ( ) are all flushers working properly? ( ) are no smoking signs displayed?

17. SIDEWALK & FRONT:
Check on: ( ) marquee for proper display ( ) are there any lamps missing? ( ) are letters properly painted? ( ) check for leaks ( ) check for breakage in neon tubing ( ) check display frames.

18. BOXOFFICE:
Check on: ( ) cleanliness and proper oiling of ticket machine ( ) are price and policy cards neat and clean? ( ) is policy card changed after the afternoon and evening performances? ( ) is box office in proper condition? ( ) what is condition of change machine? ( ) are wearing apparels removed? ( ) are shelves neat and clean? ( ) condition of venetian blinds, drapes, fans, and floor ( ) money removed at intervals?

19. LOBBIES (outer and inner)
Check on: ( ) condition of your display frames, date strips, etc. ( ) is the floor clean? ( )lighting fixtures ( ) lobby rooms ( ) condition of ticket chopper - are tickets removed daily? (check shadow boxes ( ) cigarette urns.

20. ROOFS AND GUTTERS:
Check on: ( ) are all gutters checked and cleaned regularly? ( ) also have chimneys, cornices, and pointing checked regularly.

21. SPRINKLER ALARM:
Check on: ( ) should be tested weekly ( ) emergency lighting should be carefully watched and checked

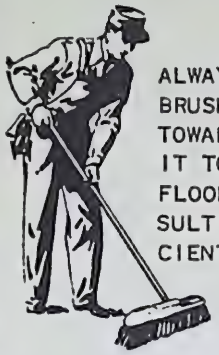
22. FIRE EXTINGUISHERS:
Check on: ( ) are they properly distributed? ( ) are they inspected and refilled yearly? Or sooner if used or evaporated?

23. FIRST-AID CABINETS:
Check on: ( ) cabinets should be checked and kept properly filled at all times - THIS IS IMPORTANT !

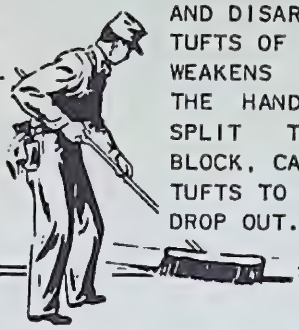
24. RUBBISH REMOVAL
Check on: ( ) are rubbish barrels emptied daily? ( ) are ashes removed from boiler rooms and taken away semi-weekly?

25. SAND & SALT:
Check on: ( ) have you sufficient amount of both to properly take care of your needs during the winter?

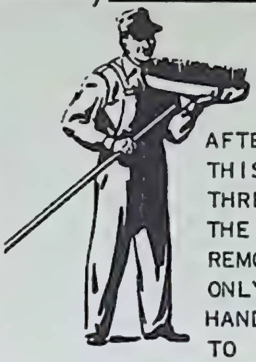
BRUSH Maintenance and Economy



ALWAYS PUSH A FLOOR BRUSH. DRAWING IT TOWARDS YOU CAUSES IT TO JUMP AND MISS FLOOR SURFACES, RESULTING IN INEFFICIENT SWEEPING.



DON'T PUSH A FLOOR BRUSH UP AGAINST WALL MODLINGS OR HEAVY OBJECTS IN ITS PATH. THIS BENDS AND DISARRANGES THE TUFTS OF THE BRUSH, WEAKENS THREADS OF THE HANDLE AND MAY SPLIT THE WOODEN BLOCK, CAUSING THE TUFTS TO LOOSEN AND DROP OUT.



DO NOT REMOVE HANDLE FROM A FLOOR BRUSH AFTER EACH SWEEPING. THIS WEAKENS HANDLE THREADS AND RENDERS THE HANDLE USELESS. REMOVE THE HANDLE ONLY WHEN ALTERNATE HANDLE HOLE IS USED TO MAINTAIN EVEN WEAR OF BRUSH.
ALTERNATE HANDLES WEEKLY.

CORN BROOMS

The following sizes are practical for theatre use:

A. #6-#7

B. Toy Brooms

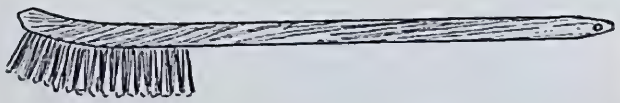
WHISK BROOMS

A. Large and small.

COUNTER BRUSHES

A. One size.

RADIATOR BRUSHES



Wood Handle Radiator Brush

Designed for cleaning between the sections of steam radiators. This is a practical well made brush that is moderate in price.

Block 24¼"Long, 3/8" Wide, 1" Thick, Length of Brush Part 7", One Row Wide, Trim 1 3/4", Length Over All 24¼", Staple Set, Stringhole at End of Handle.

REMEMBER - PLEASE DO NOT OVER STOCK: ORDER SUPPLIES FOR 30 DAYS ONLY.

PUSH BROOMS

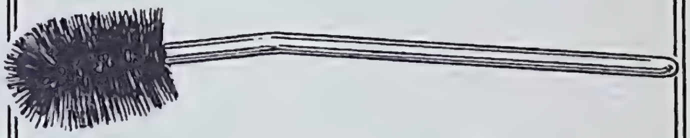
The following sizes are stocked at Standard:

A. 12 inch...14 inch...18 inch...24 inch...also Push Broom handles.

TOILET BRUSHES

A. Waterproof type.

SANITARY BRUSHES



Wood Handle Sanitary Brushes

The material used in these durable Sanitary Brushes is tightly woven into spiral grooves in the wooden handle, Length of Brush Part 6½", Diameter 3½"; Curved Handle; Length Over All 24".

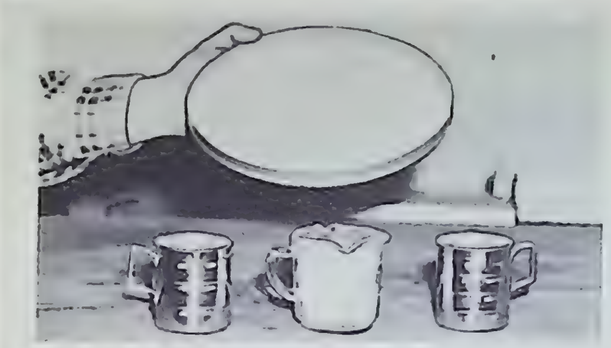
DUST PANS

A. One Size.

B. Long brass handles for pick ups.

FEATHER DUSTERS

A. All standard size.



PROPER AND IMPROPER RECEPTACLES USED FOR CLEANING POWDERS

Use of a tin cover does not give the proper measurements, but causes a waste of powder as well as creating a slippery service.

MOPS

A. 16, 20, 24, 32 ounce.

MOP WRINGER PAILS

A. One size.

FURNITURE POLISH

A. Best quality available.

METAL POLISH

A. Best quality available - follow manufacturer's directions.

COTTON FILLING FOR CHAIRS

A. Best suitable type.

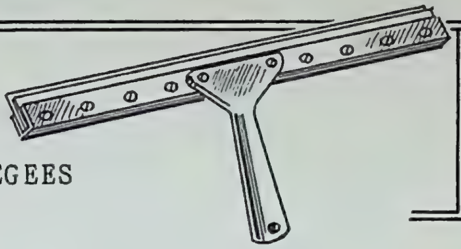
B. IMPORTANT! Be sure to keep in metal container.

CLEANING CLOTHS

A. Kept in metal container at all times.

B. Washed and dried.

C. Blanket Ends - in stock at all times.



SQUEEGEES

Cleaners have steel galvanized blades. Top blade screw holes are countersunk to make flat head brass screw fit flush Bottom blade threaded to fit end of screw.

Handle extra heavy steel stamping. An exceptionally high quality 3/32 inch double rubber is used on all sizes.

Lighter in weight than any similar cleaners made and still much stronger in use. Packed in individual cartons.

GUM REMOVER & CARBON TETRACHLORIDE

A. The above are the most practical to use. Manufacturer's instructions should be followed exactly.

PURGALL (FLOOR CLEANER)

A. Marble

B. Tile

C. Directions on drums

K. O. DEODORANT

A. Used for stink bombs, etc.

SANDIDOME BLOCK - DEODRANT

A. Directions.

DEODORANT BLOCKETTES

A. Directions.

INSECTICIDE

A. Directions.

THEATRE SPRAY

A. Directions.

DISINFECTANTS

A. D 2 Disinfectants (Bowl cleaner)

B. Coal Tar Disinfectant.

C. Directions on containers.

CRYSTALS

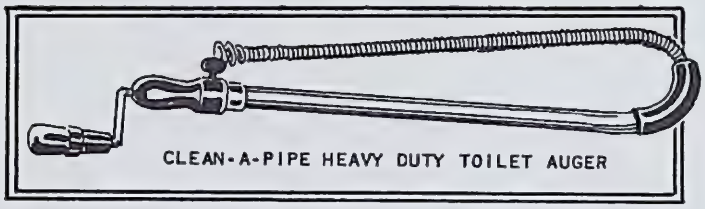
A. Spearmint flavor

B. Directions on containers

CLEANSCENT.........SANASCENT

A. Powder..clean smell for toilets.

B. Directions on containers.



CLEAN-A-PIPE HEAVY DUTY TOILET AUGER

TOILET PLUNGERS, ALSO HEAVY DUTY AUGERS

A. In most stoppage cases the above equipment will take care of stoppage immediately. If you do not succeed, be sure to call maintenance department or in an emergency, your local plumber.

BOWL CLEANER

A. This preparation is practical for bowls and urinals.

B. Use about 6 to 8 ounces in warm water.

C. Be sure to follow manufacturer's instructions.

D. Use rubber gloves for acid cleaners.

E. A swab brush is practical.

TOILET TISSUES

A. Roll
B. Interfold

TOILET SEATS

A. White

B. Black

C. Standard size

D. To clean properly, use a pail of hot water with about 3 ounces of liquid disinfecting soap. Be sure that both sides of seat are thoroughly dried; use a drying cloth after cleaning.

TOILET PAPER HOLDERS

A. Roll

B. Interfold

C. White enamel

SANITARY NAPKINS

A. Popular brands

KOTEX WASTE RECEPTACLES

A. Mostly in white enamel.

HAND SOAP

A. Liquid

B. Directions

PAPER TOWELS

A. Scott

B. Jr.

PAPER TOWEL HOLDERS

A. White enamel

WASTEX RECEPTACLES

A. Medium

B. Large

C. All white

WINDOW CLEANER

A. Liquid- most practical is bottle with a sprayer attachment.

VACUUM CLEANERS

A. Super

B. Hoover

C. Accessories for same.

D. Note: Look under "Miscellaneous" for proper care.

E. Do not jerk light cord, remove gently from socket.

ASH BARRELS

A. Galvanized iron

B. Extra heavy, six triple ribbed construction.

FIRST AID CABINETS

A. Be sure to keep stocked at all times.

CLEANERS KIT BOXES

A. Get information

TILE

A. Do not use gritty powder for tile as it will remove the finish

B. Clean with suitable liquid cleaner obtainable from the Maintenance Department.

C. Use a wet cloth.

D. Dry with clean soft cloth.

WATER COOLERS

A. Most practical types.

B. Note: Do not try to repair - call Maintenance Department.

C. See proper care of water coolers under "Miscellaneous."

WALLS

A. We do not recommend washing painted walls.

B. Submit information.

RUBBISH

A. Where practical, a rubbish metal shed should be built in an out-of-the-way place.

B. Make sure that all rubbish is properly stored in metal barrels, and tightly covered.

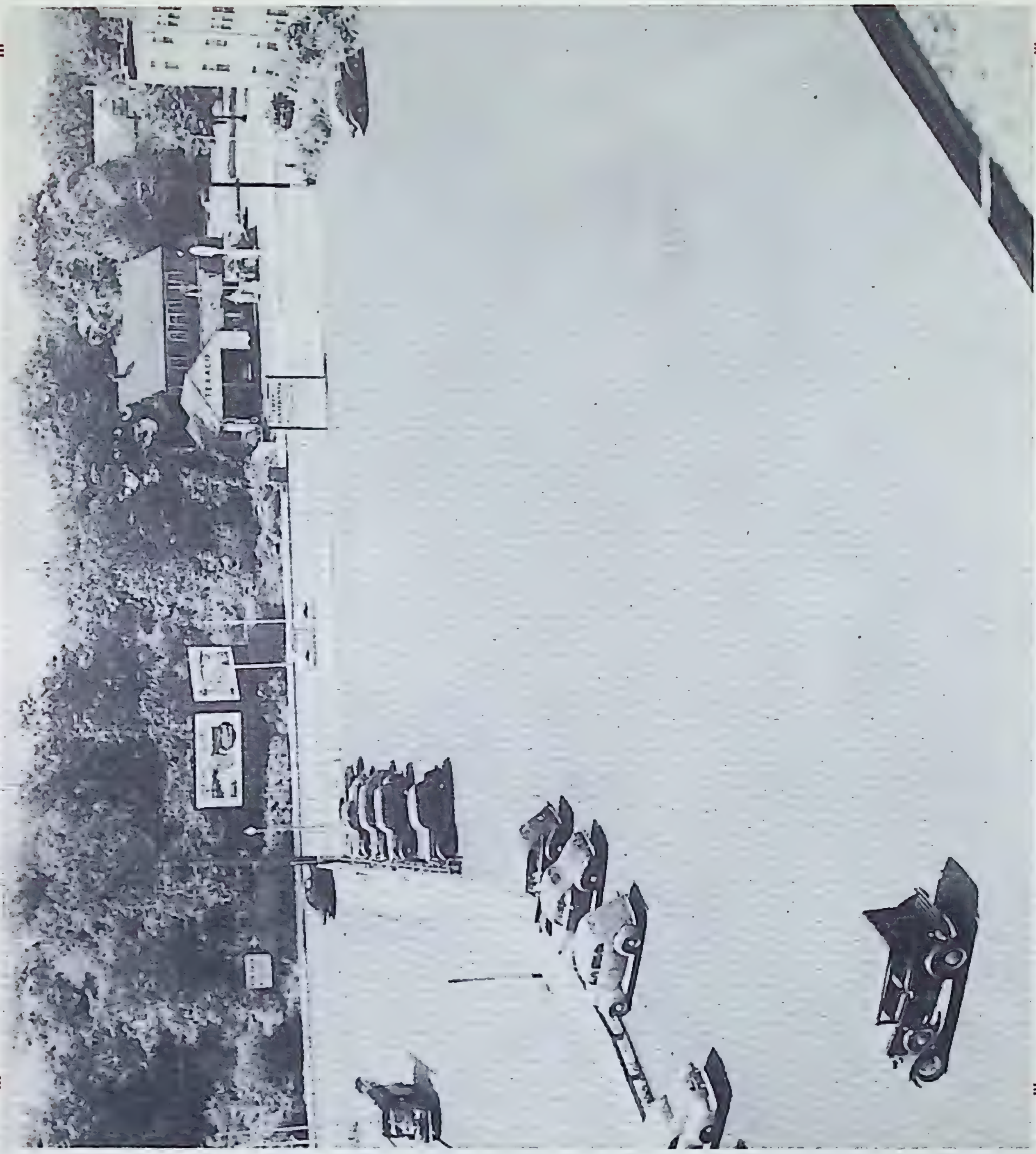
C. Pick up DAILY.

D. Keep rubbish away from exits and fire escapes.

PARKING

Maintenance Manual

PARKING



THE PARKING LOT - - AN ASSET OF EVER INCREASING IMPORTANCE TO SUCCESSFUL THEATRE OPERATION

PARKING

PARKING

Parking Space

This area should be treated as importantly as the other parts of the theatre operation, both from a standpoint of maintenance and service. To those who cater to a large transient and neighborhood automobile attendance a neat, clean and well conducted parking space can present a proper "first impression." Keeping a parking space properly maintained can add considerably to the theatre patronage and good will.

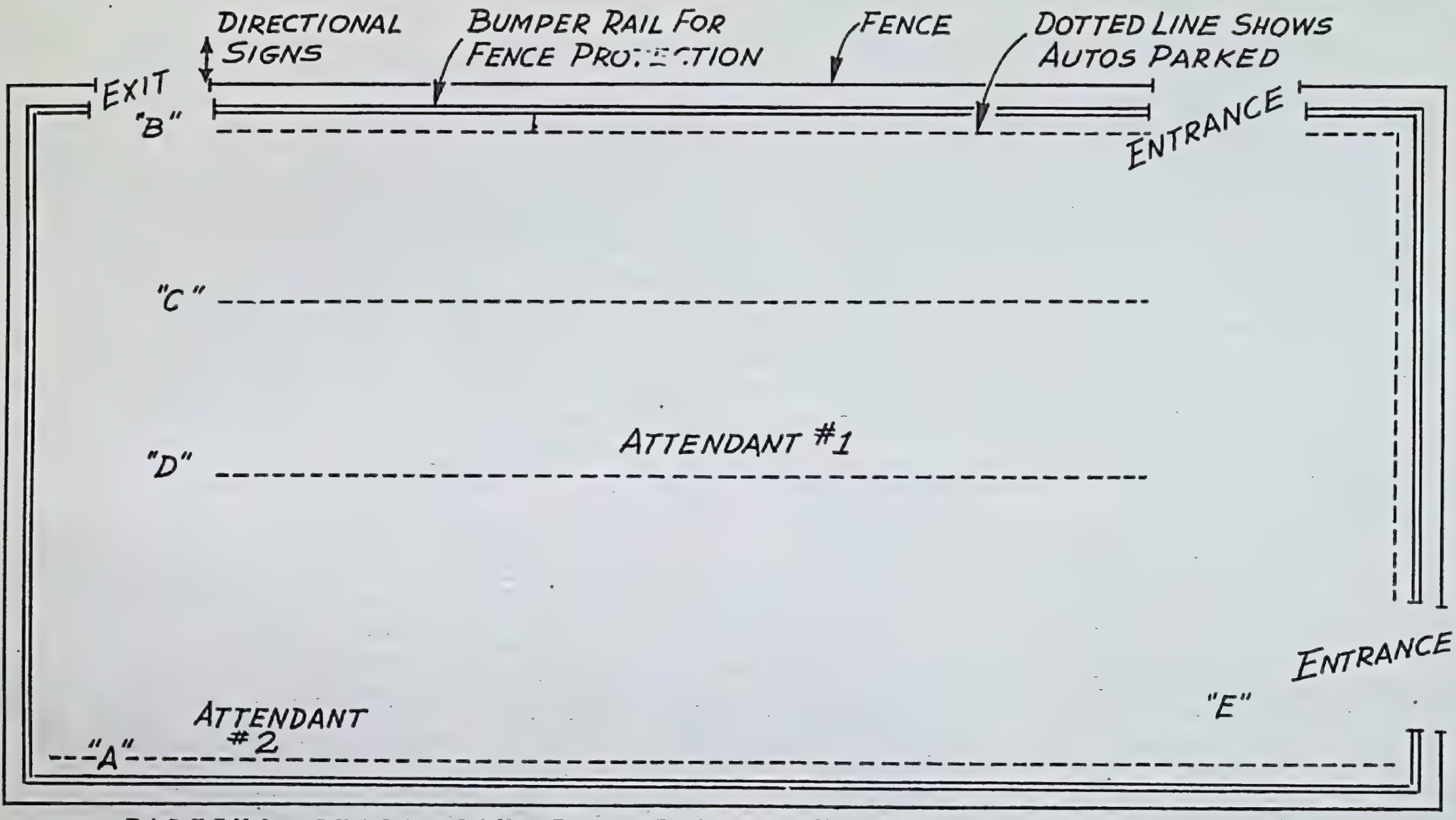
A first class automobile parking area should be equipped with the following:

1. Proper Fencing:
   - A. The entire lot should be fenced.
   - B. This should be painted at frequent intervals to prevent rusting and deterioration. Green or dark grey are commonly accepted colors.
2. Bumper Rail:
   - A. This should be placed inside parking lot about two feet from fence all around the area protecting fence from damage by cars being parked.
   - B. Cinder or dirt filled lots should be weeded out twice a year, in early spring and late fall, to enhance appearance and prevent deterioration.
   - C. Bumper Rail should be constructed of at least 10 x 12 wood with supporting strips at about 6 feet intervals (about 4 x 4) attached in vertical manner to bumper rail and fence.
3. Cinder or Dirt Filled Lots:
   - A. Keep holes filled and lot properly maintained.
4. Directional Sign:
   - A. In order to control in and out flow of cars properly, certain openings should be used as entrances, others as exits. These can be designated by having directional metal signs painted on fence with arrows pointing in or out.
5. Drainage:
   - A. Wherever feasible, proper drainage facilities should be installed to take care of heavy rains and melting snow either as dry wells or attached to sewage system.
   - B. Keep drains clear from all rubbish. In cold weather use rock salt sparingly.
6. Proper Lighting:
   - A. 500 to 1000 watt lights can be erected on roof or at strategic points.
   - B. They should be hooded to direct flow of light and prevent glaring when cars enter space.
   - C. Keep well maintained , and check frequently for looseness caused by winds or elements.
   - D. Floodlights away from theatre can be controlled either by time switches or special switches upon stage.
7. Snow Plowing and Sanding:
   - A. Usually a snow fall of over two inches requires plowing.
   - B. After having a wet snow plowed, it is usually advisable to spread entire area with sand or ashes. Those places used as foot paths for automobile patrons should be sanded.

8. Signs:
   A. Not responsible for damages to cars and lost articles signs should be posted in two or three desireable spots around the space.
   B. Near fence, one or two signs properly spaced offering Free Parking to theatre patrons should be posted.

9. A chart is attached showing the flow and fill of cars into an average theatre parking space. It is intended only as a guide.

Every manager should devise a chart applicable to his own situation.


DIRECTIONAL SIGNS
BUMPER RAIL FOR FENCE PROTECTION
FENCE
DOTTED LINE SHOWS AUTOS PARKED
EXIT
"B"
ENTRANCE
"C"
ATTENDANT #1
"D"
ENTRANCE
"E"
ATTENDANT #2
"A"

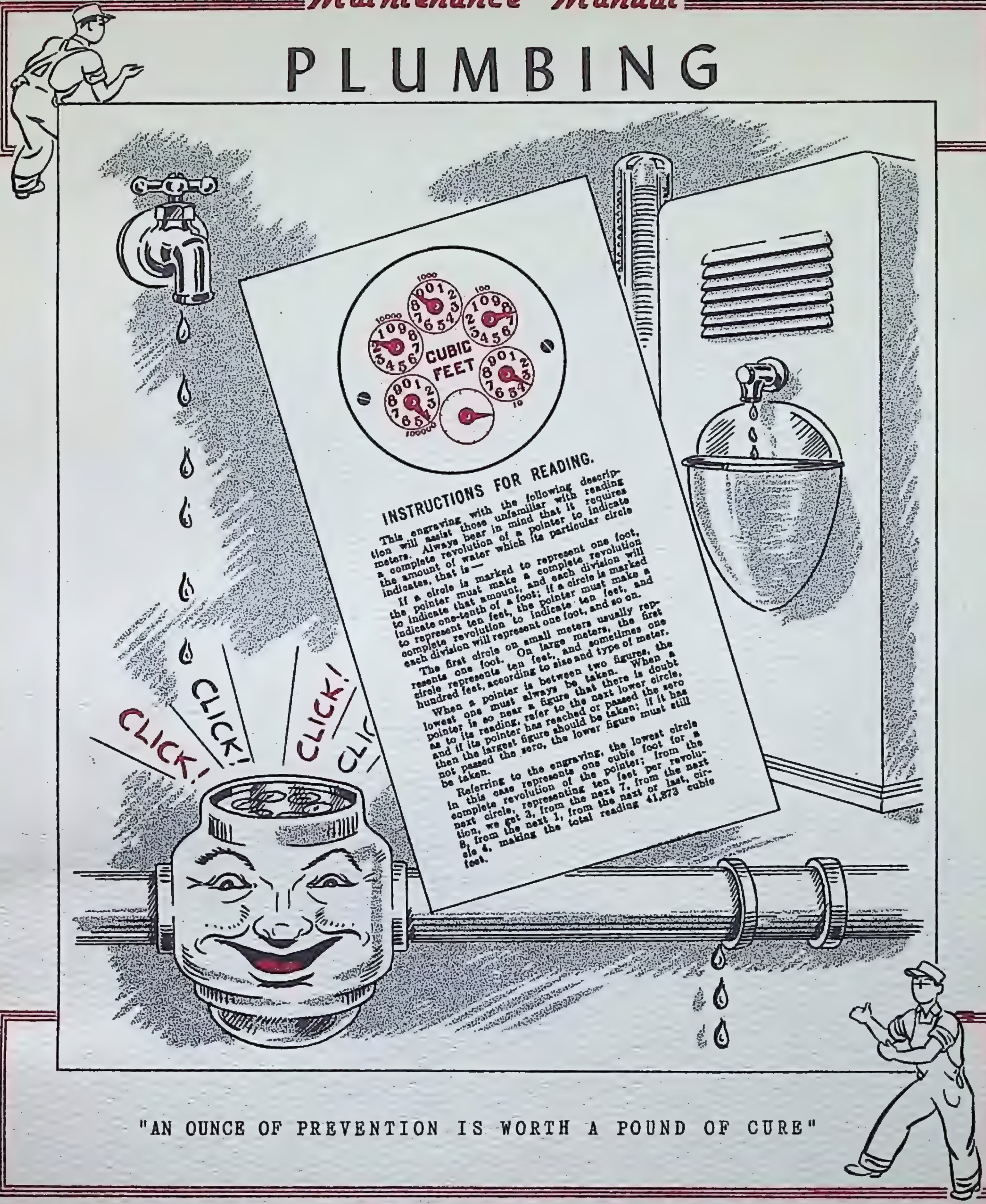
PARKING SPACE CAN BE FILLED IN THE FOLLOWING MANNER:

1. Cars flowing in through entrances are greeted by attendant "1" uniformed and equipped with police whistle.
2. They are directed to attendant "2" who parks first row of cars along section "A" with rear wheels to wall.
3. Section "B" is then filled in with front wheels to fence.
4. Section "C" is then filled with front wheels facing area "B".
5. Section "D" is followed with front wheels facing section "C".
6. Last section to be filled is section "E".
7. Cars should be spaced about two feet apart to minimize damage to autos.
8. Enough space should be left between "B" and "C" also "D" and "A" to allow cars to leave or enter at all times.
9. At termination of performance all entrances plus exits should be used to allow cars out.
10. At all times keep exits free from parked cars in order to allow free flow.

PLUMBING

Maintenance Manual

PLUMBING



INSTRUCTIONS FOR READING.

This engraving with the following description will assist those unfamiliar with reading meters. Always bear in mind that it requires a complete revolution of a pointer to indicate the amount of water which its particular circle indicates, that is—

If a circle is marked to represent one foot, the pointer must make a complete revolution to indicate that amount, and each division will indicate one-tenth of a foot; if a circle is marked to represent ten feet, the pointer must make a complete revolution to indicate ten feet, and each division will represent one foot, and so on.

The first circle on small meters usually represents one foot. On large meters, the first circle represents ten feet, and sometimes one hundred feet, according to size and type of meter.

When a pointer is between two figures, the lowest one must always be taken. When a pointer is so near a figure that there is doubt as to its reading, refer to the next lower circle, and if its pointer has reached or passed the zero then the largest figure should be taken; if it has not passed the zero, the lower figure must still be taken.

Referring to the engraving, the lowest circle in this case represents one cubic foot for a complete revolution of the pointer; from the next circle, representing ten feet per revolution, we get 3, from the next 7, from the next 8, from the next 1, from the next or last, circle 4, making the total reading 41,873 cubic feet.

"AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE"

PLUMBING

Plumbing—Water Heaters—Sprinklers

WATER FAILURE:

In the event that your city or town water supply is shut off, the following precautions should be taken;

- A. Shut down air-conditioning equipment, excepting fans.
- B. Where gas or electricity is used for heating water, shut these services off.
- C. During the winter season a close check of the heating boiler should be maintained.
- D. Post "Out Of Order" signs in all rest rooms services.

PLUMBING

- A. Keep urinal traps clean.
- B. Urinals should be equipped with strainers.
- C. All flush valves on urinals should be kept in working condition and kept free from any leaks.
- D. All flush tanks to hoppers should be working properly and free from leaks.
- E. Toilet seats should be kept clean, and all cracked and broken seats should be replaced.
- F. Loose hoppers should be securely fastened to the floor.
- G. All sluggish drains should be cleaned and freed from stoppage.
- H. Keep lavatories clean and faucets in good working condition, free from leaks.
- J. All hardware attached to stall doors should be kept in good working condition.
- K. Check exhaust fans. Keep oiled, clean, and in good working condition.
- L. Leaks are costly. Prevent them.
    1. A ¼" opening running for one month will waste 307,000 gallons of water. Cost of this water is approximately $60.00.
    2. A 1/16" opening running for one month will waste 19,200 gallons of water. Cost of this water is approximately $30.94.
    3. A 1/8" opening running for one month will cost approximately $15.38.
    4. The above figures clearly show how costly small leaks can be.
- M. A good procedure to detect leaks is to check water meter before show time. If meter is registering at too rapid a rate, call the maintenance department to check.

GAS HOT WATER HEATERS

Clean gas coil thoroughly at least once a month.

Make sure that gas pilot is in working order at all times.

Check tank periodically for leaks on corrosion.

If hot water tank is not equipped with safety valve, advise your Maintenance Department.

Remove sediment in bottom of tank through bottom valve for this purpose at least four times a year.

REPORT ALL GAS LEAKS IMMEDIATELY TO YOUR MAINTENANCE DEPARTMENT.

LEAKS

Much has been written about leaks in cleaning supplies, tissue paper, paper towels, carbons, brooms, as well as other costly articles which come under maintenance and management.

One of the costliest of leaks can be water. Unfortunately, where water bills come in quarterly, semi-annually in some spots, it is difficult to check immediately on water waste, unless of course we keep a careful check on the water meter, or comparative check of previous bills and compare with average consumption of water.

Do not allow yourself to be fooled by what seems to be a minor leak such as:

1. Leaky toilets.
2. Leaky water faucets, or a constant flow of water through faucets.

3. Leaky Urinals.
4. Water coolers that flow constantly.
5. Some hidden leaks in pipes.

Water waste can become expensive if not checked carefully by managers.

Unnecessary amount of water used by cleaners in mopping, or the hosing of sidewalks or lobbies should be carefully checked. Please remember, any successful business does not warrant waste in water leaks. Just listen to your water meter clicking away peacefully; possbily 75% of the time for good purposes, and 25% for waste. Therefore, GIVE YOUR METER A REST by being on the lookout for leaks. 1000 to 5000 gallons of water can be wasted daily, which means that your operating costs can rise in this department from $2.00 to $5.00 per day. In the course of a year, in many theatres where leaks occur, the waste in water leaks can run into many thousands of dollars.

SPRINKLERS

Care and Maintenance of Sprinkler Systems

If not properly maintained, a sprinkler system may become worthless.

Controlling valves must be kept open and water supplies must be maintained in service.

When fire occurs, sprinkler control valves should not be closed until the fire is out or under control by other means.

When, of necessity, sprinkler protection is interrupted, every effort must be made to limit the extent and duration of the interruption.

Obstructions by stock or partitions to the distribution of water discharged from sprinklers must be avoided.

Sprinkler equipment must be protected against the freezing of water in pipes or devices.

Control Valves

Secure each control valve in the sprinkler system in its normal or open position by means of wire and seal or a leather strap padlocked at the ends.

Examine all control valves of the sprinkler system at regular intervals, preferably at least once each week.

Gauges

At the weekly inspection of control valves, read the gauges showing water and air pressures on the system to make sure that normal pressures are being maintained.

Flow Tests

Provide for regular water flow test to be made from test pipes at the top of the systems and at the main drain valves of the systems.

Alterations and Repairs

If a sprinkler valve is closed thus shutting off any part of the system, notify the owner or the manager of the property immediately.

Keep valves open and the sprinkler system in service to the greatest extent possible during alterations and repairs.

After any alterations or repairs, make a special inspection to insure that the valves are open, properly secured and the system in order.

Automatic Sprinklers

Check the sprinkler heads regularly to make sure that they are in good condition, clean, free from corrosion, not painted or whitewashed, and not bent or damaged.

Always use the special sprinkler wrench in removing or installing sprinkler heads. Other types of wrenches may injure the sprinkler head.

Always have on hand an adequate supply of extra sprinkler heads of the proper temperature.

Piping

Keep piping in good condition and free from mechanical injury.

Hangers

Keep hangers in good repair. Promptly replace any broken hangers and refasten any that become loose.

Dry Pipe Valves

Check the air pressure on each dry pipe system at least once a week and pump up the systems when necessary.

Make sure that the priming water is maintained at the proper level above the dry pipe valve.

In cold weather, make sure that the valve closet is properly heated and that the heating equipment is safe and in order.

Before and during freezing weather, make sure that all low point drains of the dry piping system are kept free from water.

Thoroughly clean and reset each dry pipe valve once each year during warm weather.

Water Flow Alarm Devices

Test water flow alarm devices at regular intervals by opening the inspector's test pipe or by-pass test connection.

Test electric alarm devices weekly by means of test switch or contact.

Keep the small valve or cocks controlling the water supply to alarm devices secure in the normal open position.

Always notify the Maintenance Department before operating any valve or otherwise disturbing the sprinkler system.

All valves should be clearly marked.

In sub zero weather all sprinklers should be carefully protected against freezing by maintaining sufficient heat.

Caution

At no time should anything be hung from or laid against the sprinkler system piping.

Accidental Discharge

If accidental discharge of sprinkler head occurs, the main supply valve should be shut off and the drain valve opened. NOTIFY YOUR MAINTENANCE DEPARTMENT IMMEDIATELY WHEN THIS OCCURS.

IF THE FOREGOING RECOMMENDATIONS ARE DISREGARDED, UNLIMITED DAMAGE CAN RESULT FROM FIRE OR WATER.

POPCORN WARMERS

Maintenance Manual

POPCORN WARMERS

DAILY DILIGENT CARE - - -
A MUST FOR PERFECT PERFORMANCE!

Popcorn Warmers

POPCORN WARMERS

The popcorn warmer is a food vending device and must be kept scrupulously clean. The glass and stainless steel are cleaned by the use of lukewarm water only, WITHOUT the use of soap or cleaning powders.

When the stainless steel, perforated bottom sections are to be removed for cleaning, the following procedure is necessary:

1. With a small brush, sweep all of the small pieces of popcorn remaining on these surfaces into the drawer or serving compartment where they can be removed easily.

2. When the metal bottom is removed, carefully brush any popcorn away from the metal screen (G) in the center of this section, making certain that NONE OF THE POPCORN GOES DOWN THROUGH THE METAL SCREEN IN THE PROCESS OF CLEANING THIS AREA.

3. MAKE SURE THAT THE INNER BOTTOM IS KEPT ABSOLUTELY FREE FROM POPCORN, SO THAT IT CANNOT DROP THROUGH THE WIRE SCREEN INTO THE HEATING UNIT.

OPERATION:- See Sketch A.

A. Blower:-
Blower motor should receive care described under Electric Motors.

B. Heating Coils:-
Heating coil does not require maintenance attention if instructions given for G are followed.

C. Adjustable Thermostat:-
Thermostat is set to give a temperature of 120 degrees in the glass compartment. If a change is necessary to maintain this temperature, an adjustment can be made by removing the thermostat cover.

D. Connecting Box With Fusestat:-
The fusestat of 1.8 amp. is protection for the Blower Motor. A few 1.8 amp. fusestats should be kept on hand as an ordinary plug fuse will not fit in the fuse opening.

E. Grill With Filter:-
The filter should be kept clean. The entire operation of the warmer depends on a clean filter. Dirty filters will not pass enough air to warm the popcorn and can cause the Blower Motor to burn out. The filter unit has arrows on the label showing how it is inserted in the gill. These arrows should point toward the blower.

G. Wire Grill On Top Of Pipe:-
The grill and the entire area of the heating chamber must be kept clean. Popcorn allowed to fall into the pipe can seriously damage the heating coils.

H. Drawer:-
Drawer should be pulled out so that the flaps (I) fit securely to the sides.

J. Drawer Cover:-
Drawer cover should be put on when the machine is not being used for sales. This provides efficient heating of the popcorn.

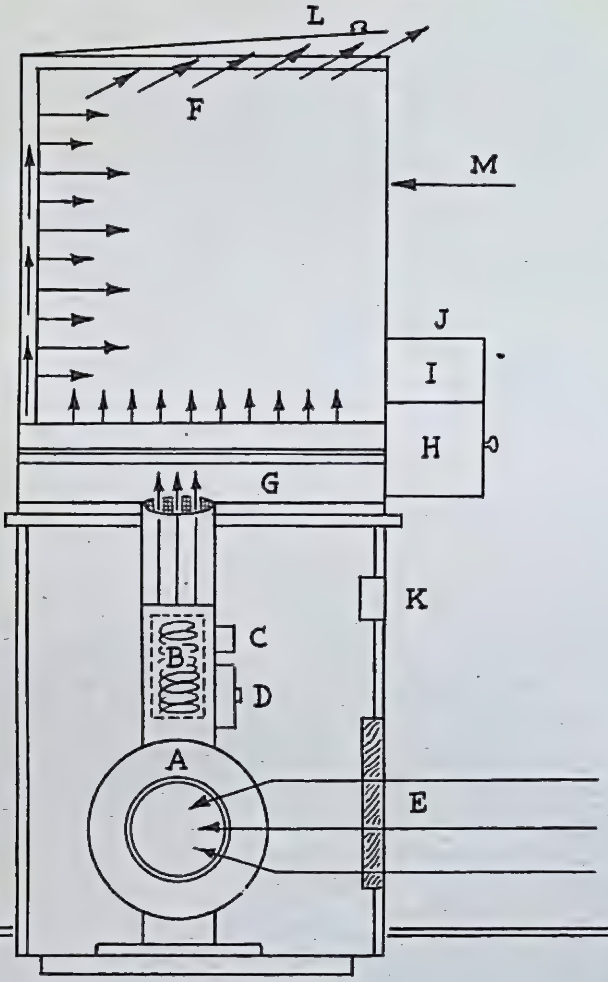
K. Switch and Pilot Light:-
The switch controls the entire warming operation, turning on the blower and heating unit. The red pilot light shows that the machine is in operation.

L. Top Cover:-

The top cover is designed to fit loosely so that the warm air will pass through the popcorn and exhaust by raising the cover. As shown in the diagram, the air comes through the bottom door filter (E) through the blower, through the pipe with heating coil, through the openings into the popcorn and then out through the upper door. If the door is in the correct position, it will stay slightly open in one corner while the machine is in operation.

M. Thermometer should read 120 degrees for best operation.

SKETCH

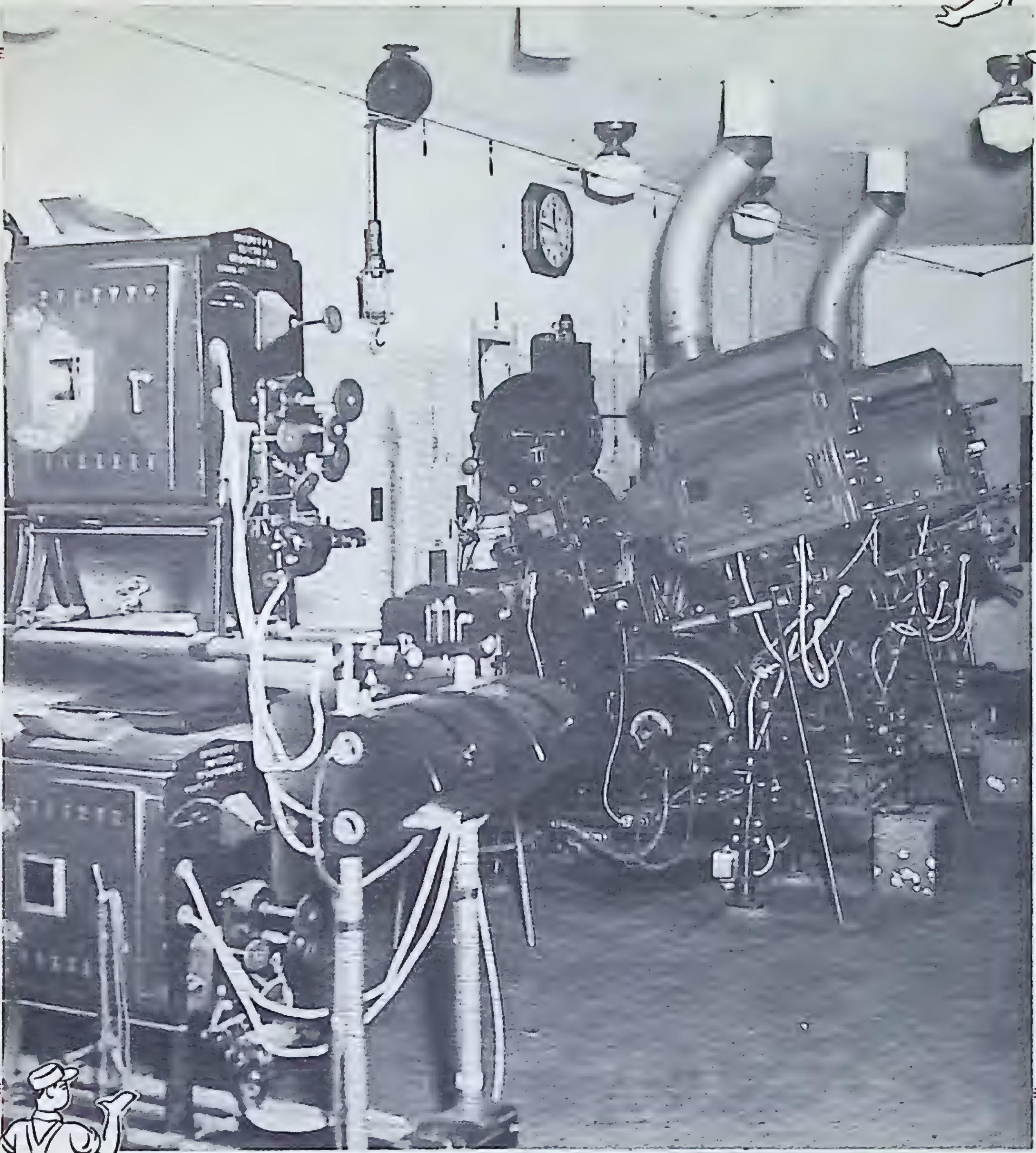


A.	BLOWER
B.	HEATING COIL INSIDE PIPE
C.	ADJUSTABLE THERMOSTAT
D.	BOX WITH FUSESTAT
E.	GRILL WITH FILTER
F.	UPPER GLASS SECTION
G.	WIRED OPENING OF PIPE
H.	DRAWER
I.	DRAWER FLAPS
J.	DRAWER COVER
K.	SWITCH AND PILOT LIGHT
L.	TOP COVER
M.	THERMOMETER

PROJECTION
AND SOUND

Maintenance Manual

PROJECTION AND SOUND



THE QUALITY OF PRODUCTION IS ENHANCED OR DIMINISHED
IN DIRECT RELATIONSHIP TO THE QUALITY OF PROJECTION

PROJECTION and SOUND

Projection And Sound

Four essentials to sound must include:

1. A steady picture upon the screen
2. A bright picture
3. The focus must be sharp
4. Well distributed sound

* * *

Variations from these essentials tend to create distractions and annoyances to patrons. In order to attain perfection, the following recommendations are vital:

1. Keep your projection rooms and equipment clean. Dirt causes wear and tear.

2. Lubricate properly all equipment. Follow the manufacturer's instructions.

3. Burn carbons at minimum current specified by manufacturer. Use carbon savers.

4. Clean lenses of optical systems with soft tissue and protect condensers and reflectors.

5. Service regularly all electrical equipment distribution points, such as: motors, generators, bus bars, fuses, switches, resistors, and condensers.

6. Allow sufficient warming-up period for all vacuum tubes. Burn tubes at specified ratings of equipment manufacturers.

7. Inspect, thread, and rewind film very carefully.

8. Keep film clean.

9. Handle reels and film containers with care.

Keep Projection Rooms And Equipment Clean. Dirt Causes Wear And Tear.

a. Dirt has been the cause of serious film fires, by preventing the proper operation of the automatic fire-shutter or by clogging the fire-valve rollers. It makes them susceptible to wear and renders them useless for the purpose intended.

b. Dirt may cause the stoppage of sound reproduction by accumulating on the various movable contacts or in the vacuum-tube contacts in the sound equipment.

c. When dirt is left on the projection arc reflector or condensers, it will cause loss of screen illumination, and results in the rapid deterioration of carbon contacts with communicated damage to the adjacent parts of the lamp mechanism.

d. Dirt on the gear-teeth and shafts of the projector, combining with the lubricating oil, acts like a grounding compound, causing excessive wear and shortening the effective life of the gears and bearings.

e. On fuse-clips, it causes high resistance and the generation of heat which may cause the fuses to blow.

f. MAKE SURE THAT THE LAMP HOUSE AND ALL PARTS ARE KEPT THOROUGHLY CLEAN BOTH INSIDE AND OUTSIDE. THE CARBON ASH, DRIPPINGS, ETC., SHOULD BE REMOVED REGULARLY ONCE A DAY.

g. The arc exhaust dampers and ducts should be cleaned frequently to remove all carbon ash, dust, etc. Any blockage, no matter how small, will affect the proper burning of the carbons, cause pitting of the mirrors, and produce a gradual accumulation of ash within the lamp house. Care should be taken to prevent dust and dirt from blowing into the projection room through open windows.

h. To get the most out of the motor-generator, it should be kept clean, and all dirt should be removed before sparking becomes serious. Increased brush life as well as increased commutator life will be the direct result. Dirt on the commutator causes arcing and pitting, SHORTENING THE LIFE AND INCREASING THE MAINTENANCE COSTS. The contacting surface of each commutator brush should be periodically examined so that commutator and brush wear is held to a minimum. Keep adjacent areas of motor generator sets clear of all materials. If the generator is on a concrete floor, care should be taken in sweeping, so that abrasive dust from the concrete will not get into the bearings. Protect all wiring against oil saturation. Spare generator should be turned over at least once a week, but not over a ten minute period,as this will have a tendency to increase the demand charge. If the floor is cement, it should be kept well painted with "dust proof" or "sealer" paint, and should be mopped frequently. A supply of lintless cloth for cleaning should be made available as well as other cleaning facilities such as carbon tetrachloride, brooms, dust pan, metal waste can and the like.

Lubricate Equipment Properly

The use of the proper type of oils and greases and their proper application will give longer life to the equipment and keep the standards of projection on a high plane.

THE FOLLOWING RULES SHOULD BE STRICTLY ADHERED TO:

1. Do not lubricate the mechanism while it is in motion. Doing so is hazardous both to the mechanism and to the projectionists.

2. Do not over-lubricate. Excessive lubrication is costly and wasteful. It also impairs the quality of the sound and the picture. Only small oil cans that dispense small quantities of oil at a time should be used.

3. ALL CONTAINERS OF OIL SHOULD BE KEPT CAREFULLY COVERED, AND OIL CANS SHOULD BE CLEANED BEFORE BEING REFILLED.

4. Cleanliness in conjunction with lubrication is an important matter, since excessive oil deposits promote the collection of dirt, dust, and grit on the vital parts of the projection equipment.

a. A stiff bristled tooth brush is useful in keeping the sprockets and idler rollers clean. The space between the fire-valve rollers and the castings in which they are mounted can easily be cleaned by inserting a narrow strip of cloth and drawing it back and forth to dislodge the dirt.

b. Should the fire rollers become coated with oil, they will collect dust and grit, which will scratch the emulsion on the film. Such marring and destruction of the film is very costly.

c. Deposits of oil, grease, and grit on the film strippers cause wearing of the sprockets and damage to the sprocket holes of the film.

d. Keep the upper friction springs and collars clean and lubricated. Avoid jerky upper magazine feed.

e. When readjusting the take-ups, place a heavily loaded reel in the lower magazine. Start the motor, and, beginning with no tension, gradually tighten until the reel picks up and revolves slowly from any position in which it is stopped. Give an extra half-turn to the adjusting knob and lock it.

f. Do not wait for the take-up belts to dry thoroughly. Carefully examine removed belts for breaks, bad spots, etc.

g. Ventilating fans in rectifiers require periodic inspection and lubrication one to two times a year. The rectifier should be located in a well ventilated, cool spot, and a free flow of air should be maintained. Avoid placing rectifiers too close to other equipment or placing materials on top of them. All areas adjacent to rectifiers should be clear of rubbish.

h. In bulb-type rectifiers, the bulb sockets and clips should be inspected to make sure they are clean and not corroded or pitted. Sandpaper may be used to remove corrosion in order to make good contact. The bulbs should be secure in their sockets and should be checked every few weeks. The various connections should be checked.

j. The power input of the rectifier should correspond to the transformer rating. Voltages should be kept as close as possible to the recommended values. Variations over 10% should be corrected.

k. A few precautions in the care and maintenance of rewinders, reels, splicers and electrical change-overs will prove helpful in prolonging the useful life of the equipment.

l. Rewinder alignment should be checked. ALL reels should be handled with care.

m. Realign the splicer and check the cutting blades.

n. ONCE A MONTH CHECK THE CHANGE-OVERS AND THE FOOT SWITCHES FOR THE PROPER CONTACT AND ALIGNMENT.

BURN CARBONS AT MINIMUM CURRENT SPECIFIED BY MANUFACTURER. USE CARBON SAVERS

THE FOLLOWING CHART IS RECOMMENDED FOR THE PROPER BURNING OF CARBONS

TYPE OF LAMP	TYPE OF CARBON	SIZE	MAXIMUM RECOMMENDED ARC CURRENT AMPERES	ARC VOLTS
CONDENSER TYPE	High Intensity, White Flame Positive 'Orotip' Cored Negative	13.6mm x 22in.	130	69
SIMPLIFIED HIGH INTENSITY	Suprex Cored Positive	7mm x 12 or 14in	50	36
	Suprex Cored Negative	6mm x 9 in.		
	Suprex Cored Positive	8mm x 12 or 14in.	70	40
	Suprex Cored Negative	7mm x 9in.		
ONE KILOWATT ARCS	Suprex Cored Positive	7mm x 12 or 14in.	40	27.5
	'Orotip' C Negative	6mm x 9in.		
	Copper Coated H.I.A.C.Forward	7mm x 9in.	66	22
	Copper Coated H.I.A.C.Rear.	7mm x 9in.		

CHECK AMMETERS AND VOLTMETERS IN PROJECTOR ARC CIRCUITS TO BE CERTAIN THEY ARE ACCURATE BEFORE MAKING ANY ALTERATIONS IN YOUR PRESENT OPERATIONS.

Clean Lenses Properly And Protect Condensers And Reflectors:

a. Lenses, condensers, and reflectors should be cleaned with special lens tissue or soft cloth. Avoid the use of abrasive cleaning materials of cloths containing fibers that scratch. Condensers and reflectors should be cleaned only when thoroughly cool, as any sudden draft may damage the optical system. Most arc lamps are equipped with inside protective flame shields. These shields should be properly maintained.

b. PROJECTION OPTICAL SYSTEMS SHOULD BE CLEANED EVERY DAY BEFORE THE SHOW. DO NOT TURN THE MIRROR AROUND IN ITS HOLDER.

c. CHECK THE MIRROR-RETAINING CLIPS FOR THE PROPER HOLDING TENSION. WHEN TOO TIGHT, THE MIRROR MAY CRACK DUE TO EXPANSION.

d. PORT GLASSES SHOULD BE CLEANED DAILY.

e. Treated lenses should be cleaned in accordance with the manufacturer's instructions. Keep oil from reaching the lens element. These instructions pertain to both sound and projection optical systems. Care should be taken to prevent chipping.

f. In using a liquid lens cleaner, be sure to use only 1 or 2 drops on the lens surface. If more liquid is used, it may seep through the lens jacket, causing a loss of light and definition.

g. When mechanisms are to be changed and realignment is necessary, make sure that machine is running to protect the lens. If this is not done, the heat of the arc would dissolve the balsam causing it to run between the elements, resulting in a loss of light definition.

Service Regularly All Electric Distributing Points, Motors, Generators:

a. Friction is the greatest cause of wear and tear on all rotating equipment. Anything that can be done to reduce friction will tend to increase the life of all such equipment. It is, therefore, impossible to place too much emphasis on cleanliness of the equipment as well as of the surroundings of such equipment.

b. Lubrication of the unit should be done in accordance with the instructions of the manufacturer, and a chart should be kept of such lubrication to show the regularity of such service. Bearings should be drained at regular intervals of not more than 6 months and refilled with a good grade oil, of a viscosity as recommended by the manufacturer.

c. Brush contact should always be good, and the tension should be kept at the minimum that will not allow sparking. Brushes should be staggered so as to allow even wear across the entire width of the commutator. Never use brushes other than the grade recommended by the manufacturer.

d. Keep all slots in undercut commutator. If necessary to use an abrasive on the commutator, clean both brushes and commutator thoroughly afterwards. Keep the shaft and couplings in proper alignment. Blow out all dust and dirt from the windings of the unit with a blower.

e. Alignment of the motor and generator shafts should be checked and the couplings kept tight. MISALIGNMENT AND LOOSENESS CAUSE VIBRATION, INCREASES WEAR, AND MAKES COSTLY REPLACEMENTS NECESSARY.

Bus Bars, Fuses and Switches

These do not ordinarily wear out; they generally burn out, and do so because they are not kept clean. DIRT AND CORROSION CAUSES RESISTANCE TO ELECTRIC CURRENT, AND RESISTANCE CAUSES HEATING. THE HEAT CAUSES ADDITIONAL RESISTANCE, AND A VICIOUS CIRCLE IS THUS BUILT UP WHICH EVENTUALLY DESTROYS THE UNIT. GOOD CONTACT, THEREFORE, IS THE FIRST REQUISITE OF EXTENDED LIFE OF THESE UNITS AND GOOD CONTACT IS MAINTAINED BY CLEANLINESS AND TIGHT CONNECTIONS. IF REFILLABLE TYPE FUSES ARE USED, MAKE SURE THAT ALL CONTACTS WITHIN THE FUSE ITSELF ARE CLEAN AND TIGHT. CARE SHOULD BE TAKEN NOT TO USE A FILLER WHICH IS RATED OVER OR UNDER RATING STAMPED ON FUSE. The numerous a/c and d/c switches throughout the projection room should be inspected at least once a month. IF IN NEED OF SERVICE, CALL MAINTENANCE DEPARTMENT.

Resistors

All outside connections on ballast rheostats should be checked. The cover should be removed periodically, and the bolted connections to the resistor material checked. RECTIFIERS SHOULD NOT BE OPERATED ABOVE THE RECOMMENDED RATING. ONCE A WEEK OR MORE OFTEN IF NECESSARY, BLOW OUT THE ACCUMULATED DIRT AND LINT IN THE RECTIFIER STACKS. THIS WILL INSURE PROPER VENTILATION AND COOLING.

Allow Sufficient Warming-Up For Vacuum Tubes. Burn Tubes At Specified Ratings.

a. It is important that amplifier and rectifier tubes be pre-heated and become stabilized at operating temperatures before the sound system is operated. Usually a 15 minute period is sufficient for this purpose.

b. Mercury-vapor tubes must be pre-heated to drive the mercury from the filament and plate elements of the tube before applying the anode voltage. This usually requires 3 to 5 minutes, depending upon the location of the mercury in the tube and whether or not the tube had previously been pre-heated. Tubes of this type should have an initial pre-heating period of 5 to 15 minutes and then used for 2 or 3 days. They can then be stored in a vertical position for future use.

c. Once a mercury-vapor tube has had an initial pre-heating, and all the mercury has been driven off the tube elements, the daily pre-heating period is much shorter than when the tube is first put into operation.

d. Equipment manufacturers issue instructions regarding pre-heating of tubes where necessary. Follow these instructions carefully.

Inspect, Thread And Rewind Film Carefully. Keep it Clean.

a. Film should be handled carefully at all times. It should be kept away from all sources of heat, except the normal heat during the projection. The regulations against smoking should be obeyed.

b. Under no circumstances should film be left lying exposed on benches and elsewhere but should be placed in metal containers or cabinet after use.

c. Film should be inspected each time before it goes through the machine. THE ONLY WAY THAT FILM CAN BE PROPERLY INSPECTED IS BY SLOWLY WINDING THE FILM. Inspections should cover tears, splices and defect in sprocket-holes. Do not use bent reels. Use fresh film cement for making splices.

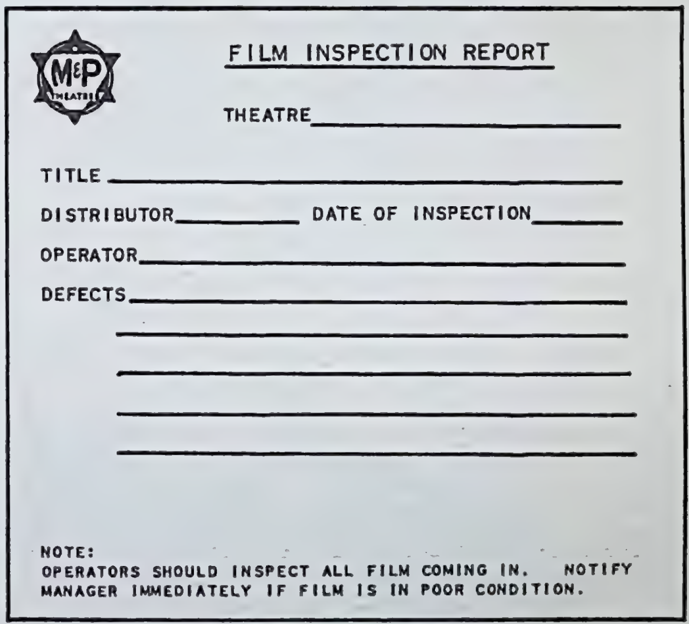
d. Film should be carefully threaded through the machine. It should be in proper place on every roller, gate and sprocket. EXCESS SLACK at top and bottom of machines should be taken up befor the machine is started. MAGAZINE DOORS SHOULD BE CLOSED AS SOON AS THE FILM IS THREADED AND SHOULD BE KEPT CLOSED DURING THE ENTIRE OPERATION.

Handle Reels And Film Containers With Care.

a. A bracket or rack should be erected on which to keep all empty reels instead of allowing them to lie on the floor or elsewhere where they may be damaged. Film storage cabinets should be kept clean.

b. After putting reels into the film cabinet, the compartment door should be closed by hand. It should not be allowed to snap back into place by its own weight. Care should be taken that ends of film do not stick out.

Film Inspection Form



M&P THEATRES

FILM INSPECTION REPORT

THEATRE ________________

TITLE ________________

DISTRIBUTOR ________ DATE OF INSPECTION ________

OPERATOR ________________

DEFECTS ________________

NOTE:
OPERATORS SHOULD INSPECT ALL FILM COMING IN. NOTIFY MANAGER IMMEDIATELY IF FILM IS IN POOR CONDITION.

In order to avoid any misunderstanding operator should make a thorough inspection, and if damaged or scratched, he should immediately report (copy above) in duplicate: one for his files, one for manager.

Electrical Conversion Equipment.

Rectifiers.

a. Make sure that the rectifier is not operated above the recommended rating. Every three months, or more often if necessary, raise the top section of the rectifier assembly and blow out accumulated dirt and lint in the rectifier stacks. This will insure proper ventilation and cooling.

b. The ventilating fan in rectifiers requires periodic inspection and lubrication twice a year.

c. See that the rectifier is located in a well-ventilated, cool spot. The flow of air through this equipment should not be restricted by being placed too close to other equipment or by placing material on top of the rectifier.

d. All rectifiers when not in use should have a proper protective covering to insure against outside elements seeping in through the ventilation duct. This will prevent short circuiting of unit.

e. Do not store anything in rectifier room and keep area free of all dirt and rubbish.

f. In all types of rectifiers used in connection with arc operations, contactors should be checked at least twice a month for pitting.

g. Should pitting be noticeable, a very fine grade of sandpaper should be inserted between the fixed contact and the movable contactor by slightly pressing the contactor against the sand paper, and by moving the sandpaper evenly up and down. Pitting can be corrected without throwing contactor out of line. WARNING! DO NOT SANDPAPER EACH CONTACT SEPARATELY.

h. In all types of rectifiers all fuses on the input and output should be carefully checked once a week.

j. In the event fuses check properly, and yet, a noticeable drop in amperage still exists, call the maintenance department IMMEDIATELY. UNTIL THIS CONDITION IS CORRECTED, DO NOT USE THIS RECTIFIER. USE YOUR EMERGENCY EQUIPMENT.

Motor Generators:

a. Check alignment of motor and generator shafts and keep couplings tight. Misalignment of shafts and loose couplings cause vibration, increased wear and part replacements.

b. Generator arcing can be caused by the following:

1. Brushes not seated on commutators
2. Poor contacts
3. Mica not properly undercut
4. Dirty commutators
5. Improper grade of brushes
6. Improper brush tension

c. Dirty and arcing commutators can cause pitting and heating, shortening their life, and increasing the maintenance cost.

d. Oil bearing housings should be flushed out every six months and refilled with fresh oil of the proper grade.

e. If a ball bearing motor generator has been out of service for a time, the bearing covers should be removed, the old grease cleaned out and replaced with new grease.

f. When generator is not in use, a proper protective covering should be placed over the generator, to insure against dirt, moisture, and any other foreign elements.

The Care Of Screens

a. The reflecting surfaces of screens are damaged by accumulated dust and dirt, the amount of which depends upon the condition of the air and its movement.

b. Every precaution should be taken to minimize this accumulation. Draperies near screens should be kept as free as possible from dust and dirt as should the rigging, ceiling joists and gridirons above them. Wherever possible, front surfaces of screens, when not in use, be protected by close-in curtains or drapes located far enough away to prevent contacts. Circulation of air through the holes in screens should be prevented if necessary by backing them with fabric EXCEPT IN FRONT OF THE HORNS.

c. In order to repair small holes and rips, the theatre maintenance man can attach a small piece of adhesive to the back side.

d. In all cases masking should be put up on well secured wooden frames and nailed to the picture sheet frame. This masking material should be cleaned when necessary with a vacuum cleaner or stiff bristled brush.

e. When screens become discolored due to atmospheric conditions, thereby losing screen illumination, contact your maintenance department for reprocessing.

f. Proper maintenance not only minimizes screen costs but improves projection as well.

g. Auditorium lights should never interfere with the screen illumination.

h. Any necessary lights should be placed out of the line of vision of those viewing the film.

PREVENTION OF FIRE IN THE PROJECTION ROOM AND CONSERVATION OF FILM

Herewith are suggestions which, if followed, will materially reduce the possibility of Projection room fires.

1. PROHIBIT SMOKING at all times.

2. Prohibit reading when projectors are being operated.

3. Carefully inspect all film before its first running, immediately re-splicing all defective patches and cutting out weakened or broken sprocket holes and damaged film.

4. In making up the first show, if it is noted that the film is badly cut or in a dangerous condition to run, projectionist should immediately report this to the theatre manager, who in turn will make every effort to get a new print at once.

5. Inspect film carefully after each showing.

6. Insist upon slow and careful re-winding to prevent damage to sprocket holes and weakening of splices. Both can easily be caused by too fast starting or re-winder or by too much tension.

7. Keep re-winder in proper alignment to prevent reel sides from damaging the edge of film.

8. Do not use exchange reels while film is being projected. They are designed for shipping only.

9. DO NOT USE BENT REELS.

10. Do not make film splices by hand. Use one of the several efficient splicers manufactured for that specific purpose.

11. Keep film splicers in good condition.

12. Use only film cement of proved efficiency. Keep its container tightly closed as much as possible. Discard cement which has been weakened by exposure to air or by settling.

13. Be sure that film to be spliced is clean and free from oil. After making them be sure that splices are tight, that sprocket holes are properly matched and that film is flat and in perfect alignment.

14. Keep film (features, - shorts, trailers and leaders) in approved film cabinets when not in projector magazines or on re-winder. As a safety measure, cabinets should have separate compartments and tight fitting doors.

15. Hot carbon stubs are a hazard and should be kept in a separate container.

16. Provide and insist upon the use of a waste container for scrap film. This container should be used for nothing else, and TO BE EMPTIED DAILY.

17. Oily rags should not be permitted in the projection room.

18. Do not thread projectors with lamp houses burning.

19. Remove film from projector as soon as running is completed, and delay threading next reel as long as possible to permit projector to cool. Leave side door and film trap door open to hasten cooling.

20. Watch for emulsion deposits when running new film. If this occurs, thoroughly clean projector before running again.

21. Turn or replace all worn or undercut sprockets in projector and sound head.

22. Replace all worn strippers, guide rollers, film guides, tension shoes and other parts of mechanism and sound head which come in contact with film.

23. Make frequent inspections of automatic fire shutter mechanism of the projector and be sure it operates freely and promptly at starting and stopping of projector.

24. BE SURE THAT MAGAZINE DOORS ARE NOT BENT, THAT THEY CLOSE TIGHTLY AND LOCK FIRMLY. THEY SHOULD BE KEPT CLOSED WHILE FILM IS ON PROJECTOR.

25. Use only an approved type of electric heater in projection room.

26. Make careful inspection of all port holes. Make sure that shutters work freely, and are equipped with fusible links.

27. Check daily to see that shutters and shutter dropping device are in perfect operating condition.

28. Keep hand dowsers on lamp-houses or projectors in good shape.

29. IMPORTANT.....Do not permit the use of home-made, makeshift or experimental devices of any sort.

30. IMPORTANT...Insist that the projection room and rooms adjoining it are kept clean and free from loose paper, rags, scrap film, and other inflammable or combustible material.

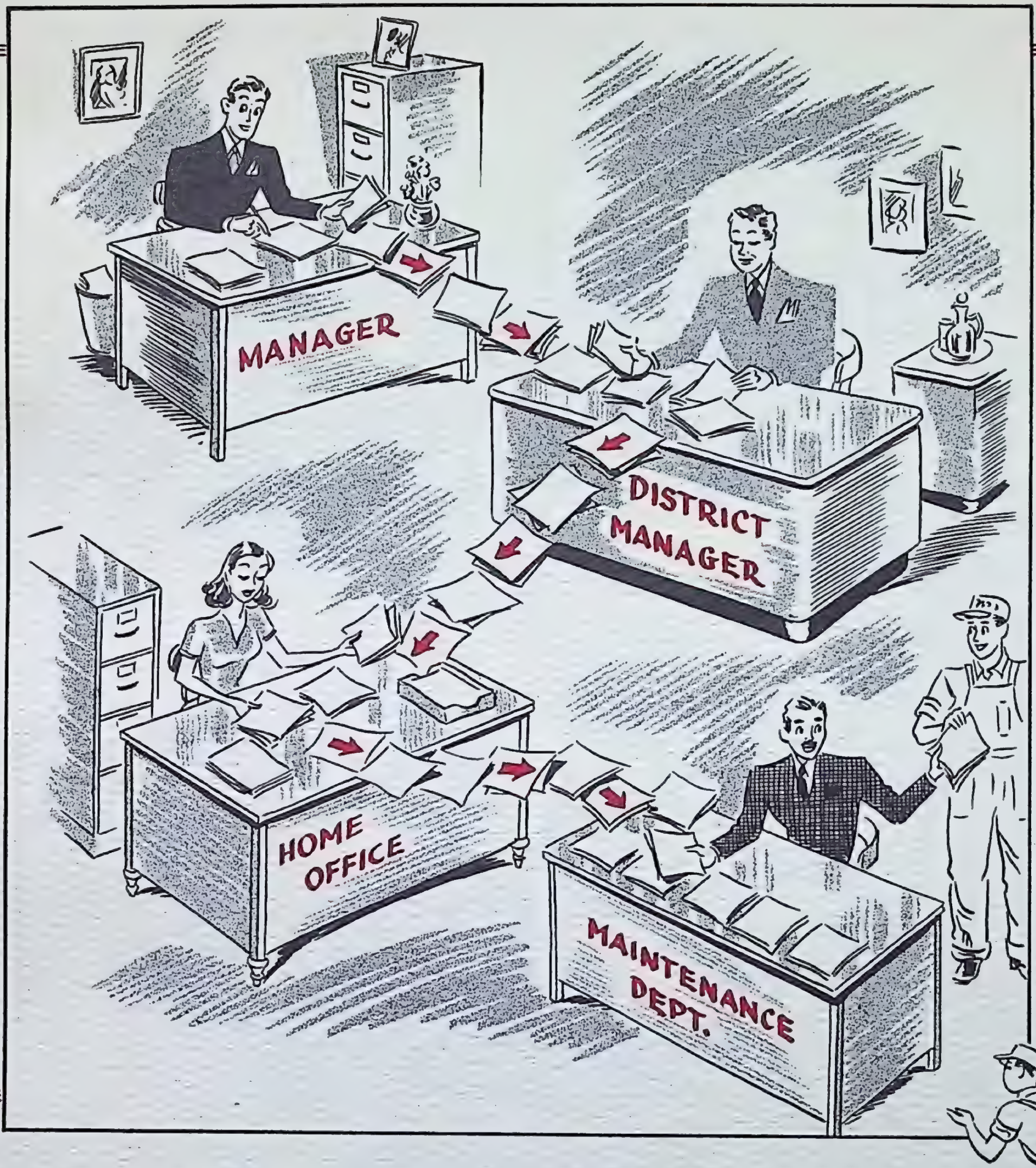
31. MAKE SURE THAT DOOR TO BOOTH IS SELF CLOSING.

32. MAKE SURE THAT FRESH AIR INTAKE IS WORKING PROPERLY.

REQUISITIONS

Maintenance Manual

REQUISITIONS


MANAGER
DISTRICT MANAGER
HOME OFFICE
MAINTENANCE DEPT.

IF YOU DON'T NEED IT, DON'T ASK FOR IT ...
IF YOU DO NEED IT, SECURE IT THROUGH THE PROPER CHANNELS!

REQUISITION

As hundreds of requisitions are handled in our Maintenance Department weekly, a great deal of care and caution should be taken in making out forms. When submitting your orders send requisitions first to D. M. for his approval. Managers can avoid PLEASE RUSH ORDERS by keeping their fingers on his maintenance needs. This is a simple matter, as managers can check with operators on carbons, cleaners, supplies, etc. In some districts, it has been found practical to put in requisitions on the FIRST AND FIFTEENTH OF EACH MONTH, or possibly the 5th and 20th. As a matter of fact, on a twice monthly basis, MANAGERS CANNOT OVERSTOCK and have on hand approximately one months supply.

Over-stocking in theatres unnecessarily tie up thousands of dollars in supplies. Over-stocking is a very expensive and unbusiness-like procedure; FIRST, for some reason or other, merchandise becomes lost, strayed, or stolen - SECOND, if there is an excessive amount of cleaning or other supplies around, even efficient employees become careless and do not get the most out of cleaning and other supplies.

SUPPLY COST

It is sound business for every theatre manager to know his weekly supply costs; with such knowledge, plus careful ordering and education of his employees, he can make a substantial savings. Therefore, please order carefully in the following manner:

1. Use regular requisition form A-75 for cleaning supplies of all type. Be sure to indicate clearly the size of brooms, type of material, etc.
2. CARBONS: use form A-75 with no other items included. Be sure to submit your monthly carbon inventory for #226.
3. TICKETS of all sorts, only on ticket requisition #3007.
4. Lamps, only on lamp requisition #3006. Indicate clearly: voltage type, color, wattage. DO NOT OVERSTOCK!
5. UNIFORMS:use regular requisition form #A-75. Be sure to indicate clearly sizes, description, and other necessary information.
6. SOUND - PROJECTION - MECHANICAL PARTS - everything pertaining to parts, door stops, door checks, etc. should be put on separate requisition. Use form A-75. Be sure to describe model number, name of manufacturer, serial number, or in other words, give complete information thereby facilitating matters for the Maintenance Department.
7. OFFICE SUPPLIES: Forms, pencils, rubber bands, etc., should be on a separate requisition, using form #A-75.
8. REPAIRS: Should be put on a separate requisition using form #A-75. Give full information on repairs, as well as reason why repairs are necessary.
9. NEW REPLACEMENTS or IMPROVEMENTS: A separate requisition should be submitted, using form #A-75. Be sure to give substantial reasons for new replacements, etc.
10. EMERGENCY: Use an EMERGENCY REQUISITION: This is to be stamped in red. EMERGENCY REQUISITION should be sent only in case of extreme emergency matters and then use the EMERGENCY REQUISITION as a follow up.

THEATRE REQUISITION FORMS

FORMS	*FORM NUMBERS*
ADVERTISING REPORT	506
ADVERTISING ACCESSORIES ORDER	503
BONDING APPLICATION FORMS	F2002-4TH REV.
CANDY ORDER	SC110 REV.
CANDY AND VENDING PROFIT AND LOSS	BA 42 REV.
CARBON INVENTORY (MONTHLY)	226
CASHIERS MONTHLY SHORTAGE & OVERAGE	315
DAILY BOX OFFICE REPORT	BA 65
DEPOSIT SLIPS	319 REV.
EMPLOYER REPORT ACCIDENT-(PUBLIC)	LC 2058
EMPLOYER REPORT ACCIDENT-(EMPLOYEE)	LC 2680
FILM DAMAGE REPORT BY OPERATORS	NO NUMBER
HOURLY REPORTS (BOX OFFICE)	1683
INSPECTION REPORTS	- - -
INTER-OFFICE COMMUNICATION	888
INTER-OFFICE COMMUNICATION (LARGE)	1419 M&P
INTER-OFFICE COMMUNICATION (SMALL)	1419 A M&P
INVOICE & CHECK REGISTER	BA15 REV.
LAMP INVENTORY (PUBLIX)	1806
LONG DISTANCE TELEPHONE CALLS	833
MANAGER'S WEEKLY LETTER	1675 REV.
METER READINGS	- - -
MOVING PICTURE FILM SHIPPING FORM	NO NUMBER
PAYROLL	BA 52
PETTY CASH REPORT	BA 66
PETTY CASH VOUCHER	304
PERSONNEL RECORD (M&P)	1486
PAYROLL RECORD (EMPLOYEES)	BA 31 REV.
PASS REQUISITION AND RECORD	F 301 REV.
PROGRAM AND SCHEDULE	1167 REV.
REAL ESTATE INCOME (DEPOSIT RECORD)	1256 REV.
REAL ESTATE STATUS (RENTAL STANDINGS)	BA 46 REV.
REQUISITION FOR PAYMENT	303 REV.
REQUISITION FOR LAMPS	3006
REQUISITION FOR SUPPLIES	A-75
REQUISITION FOR TICKETS	3007
RETURN ACCESSORY FORMS	503-A
SPECIAL BUDGET AUTHORIZATION	2065
TERMINATION OF EMPLOYMENT	BA-72
TRAVELERS WEEKLY EXPENSE REPORT	703-X REV.
TICKET CONTINUITY	BA-64
THEATRE CHECKS	- - -
THEATRE MANAGER'S WEEKLY REPORT (BIBLE)	BS-1
VENDING MACHINE REPORT	BS-7
WAGE RECEIPTS	NO NUMBER
WEEKLY CANDY & VENDING REPORT (MASTER)	BA-62
WITHOLDING PAYROLL FORMS	W-4 REV-1944 U.S. TREASURY INT.REV.DEPT.
NEW REQUISITION FORMS	

ENVELOPES

COIN ENVELOPES

INVOICE AND CHECK REGISTER ENVELOPES *(MANILA)*

MANILA ENVELOPES 4¾ X 11

PENNY PINCHER (NEW) WHITE

PASS ENVELOPES (MANILA - FORM #1694)

PLAIN M & P ENVELOPES (WHITE) 4 1/8 X 9½

PLAIN M & P ENVELOPES (WHITE) 3 5/8 X 6½

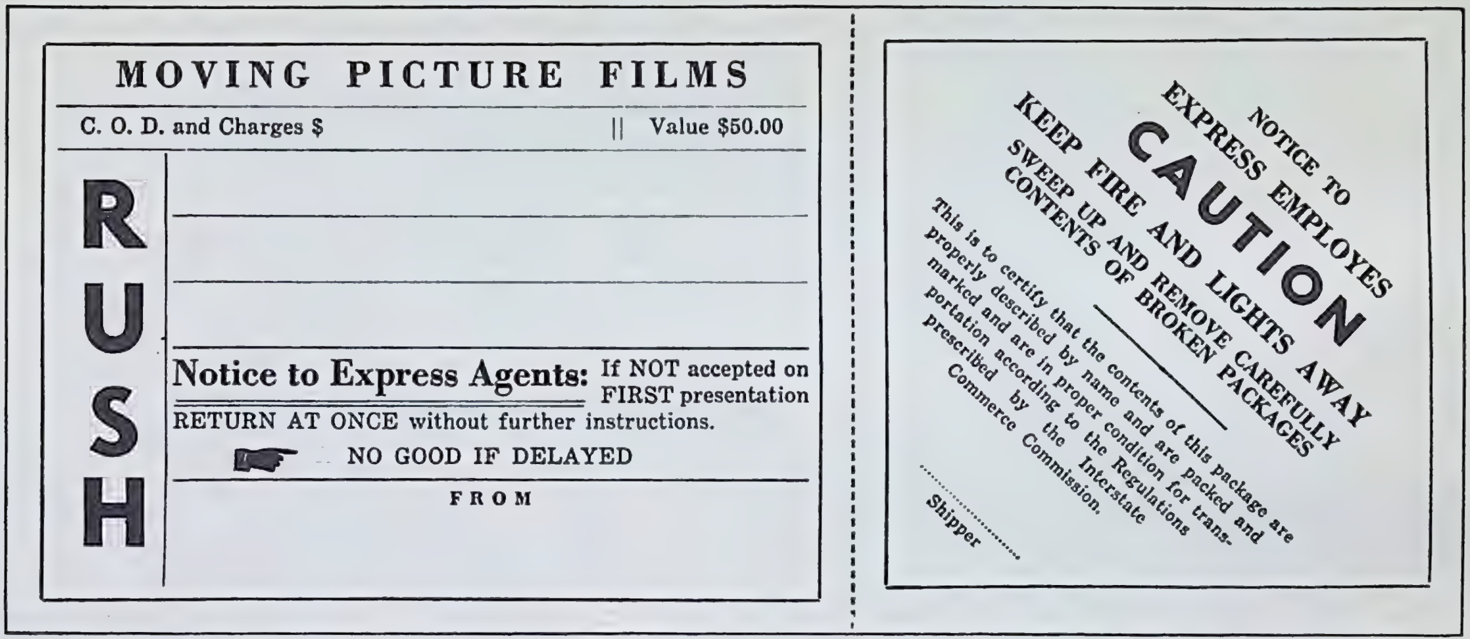
REFUND ENVELOPES (FORM 1651 REV.)

THEATRE MANAGER'S REPORT SECTION (BLUE) - FORM #B52)

PROPER WAY TO MAKE OUT REQUISITIONS

In order to facilitate matters for managers, we are listing in the ensuing pages time saving procedure in submitting requisitions as well as other forms used in the Maintenance Department.

SAMPLE
FILM
SHIPPING TAG
(Slightly Smaller)



MOVING PICTURE FILMS

C. O. D. and Charges $ || Value $50.00

RUSH

Notice to Express Agents: If NOT accepted on FIRST presentation RETURN AT ONCE without further instructions.

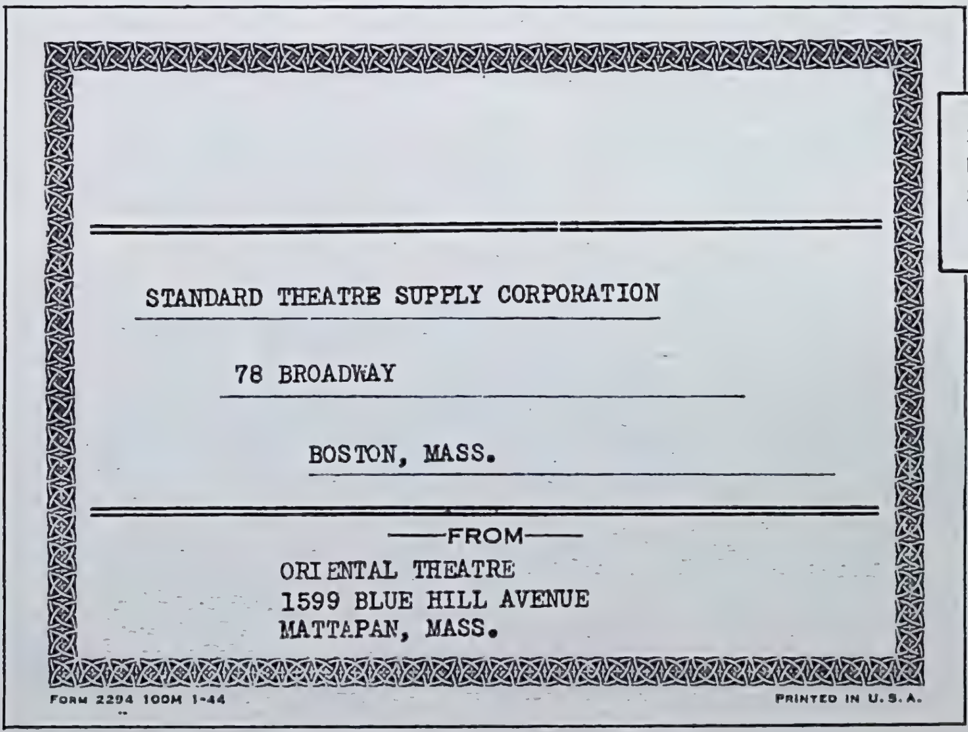
☞ NO GOOD IF DELAYED

FROM

NOTICE TO
EXPRESS EMPLOYES
CAUTION
KEEP FIRE AND LIGHTS AWAY
SWEEP UP AND REMOVE CAREFULLY
CONTENTS OF BROKEN PACKAGES

This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the Regulations prescribed by the Interstate Commerce Commission.

.... Shipper



STANDARD THEATRE SUPPLY CORPORATION
78 BROADWAY
BOSTON, MASS.

—FROM—
ORIENTAL THEATRE
1599 BLUE HILL AVENUE
MATTAPAN, MASS.

FORM 2294 100M 1-44 PRINTED IN U. S. A.

SAMPLE
EXPRESS
SHIPPING TAG
(Acutal Size)

FORM A-75 F. E. CO.
200 PADS 4-46

STANDARD THEATRE SUPPLY CORP.

78 BROADWAY
BOSTON - MASS.

1

SHIP TO Esquire Theatre

ADDRESS 264 Huntington Ave., Boston (Zone) Mass.

VIA CHARGES

CHARGE TO:

ORDER

ORDER NO. 4

DATE 10/16/46

ITEM NO.	QUANTITY ORDERED	DESCRIPTION OR CATALOG NUMBER ONLY ONE ITEM ON EACH LINE	FOR STANDARD ENTRY ONLY				
			QUANT. SHIPPED	UNIT LIST PRICE	Disc.	AMOUNT	CASH DISC.
1		Equipment					
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

Three sheets to a set
Mail original and second copy to your
District Manager for approval
Retain third copy for your record

ISSUED BY (Signature of Manager)

APPROVED BY (Signature of District Manager)

SHIPPED

VIA

TOTAL		
PLUS		
TRANSPORTATION		
GRAND TOTAL		

SHEETS 1 AND 2 ARE TO BE FORWARDED TO STANDARD. RETAIN SHEET 3.

FORM A-75 F.E.CO.
200 PADS 4-46

STANDARD THEATRE SUPPLY CORP.

78 BROADWAY
BOSTON - MASS.

1

ORDER

SHIP TO Esquire Theatre

ADDRESS 264 Huntington Ave., Boston (Zone) Mass.

VIA ____ CHARGES ____

CHARGE TO: ____

ORDER NO. 2

DATE 10/16/46

ITEM NO.	QUANTITY ORDERED	DESCRIPTION OR CATALOG NUMBER ONLY ONE ITEM ON EACH LINE	FOR STANDARD ENTRY ONLY				
			QUANT. SHIPPED	UNIT LIST PRICE	Disc.	AMOUNT	CASH DISC.
1		Supplies					
2							
3							
4							
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12							
13							
14							
15							
16							
17							
18							

Three sheets to a set
Mail original and second copy to your
District Manager for approval
Retain third copy for your record

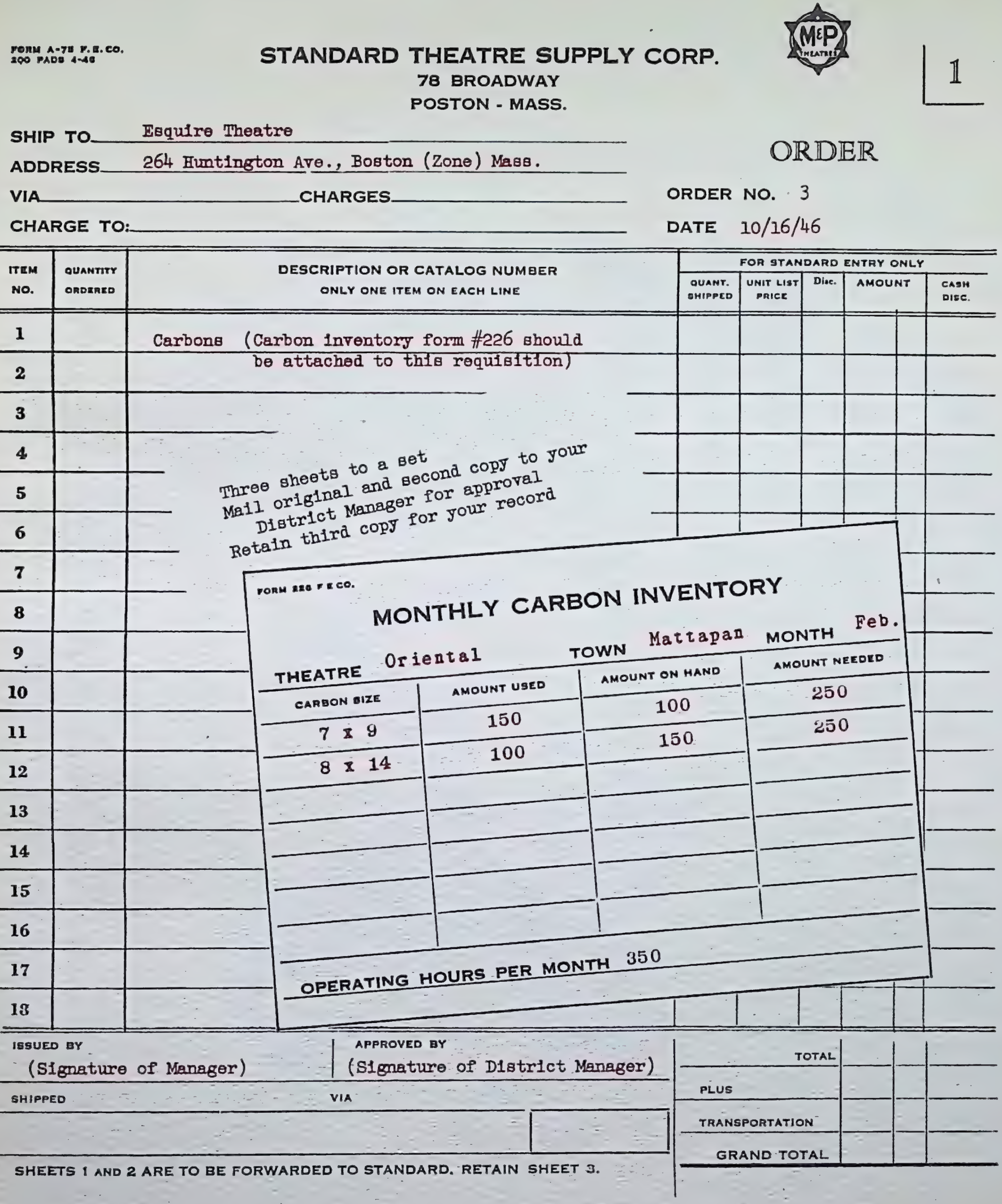
ISSUED BY
(Signature of Manager)

APPROVED BY
(Signature of District Manager)

SHIPPED ____ VIA ____

TOTAL			
PLUS			
TRANSPORTATION			
GRAND TOTAL			

SHEETS 1 AND 2 ARE TO BE FORWARDED TO STANDARD. RETAIN SHEET 3.



FORM A-75 F.E.CO.
200 PADS 4-46

STANDARD THEATRE SUPPLY CORP.
78 BROADWAY
POSTON - MASS.

1

ORDER

SHIP TO Esquire Theatre
ADDRESS 264 Huntington Ave., Boston (Zone) Mass.
VIA CHARGES
CHARGE TO:

ORDER NO. 3
DATE 10/16/46

ITEM NO.	QUANTITY ORDERED	DESCRIPTION OR CATALOG NUMBER ONLY ONE ITEM ON EACH LINE	QUANT. SHIPPED	UNIT LIST PRICE	Disc.	AMOUNT	CASH DISC.
1		Carbons (Carbon inventory form #226 should					
2		be attached to this requisition)					
3							
4							
5							
6							
7							
8							
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13							
14							
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16							
17							
18							

FOR STANDARD ENTRY ONLY

Three sheets to a set
Mail original and second copy to your
District Manager for approval
Retain third copy for your record

FORM 226 F.E.CO.

MONTHLY CARBON INVENTORY

THEATRE Oriental TOWN Mattapan MONTH Feb.

CARBON SIZE	AMOUNT USED	AMOUNT ON HAND	AMOUNT NEEDED
7 x 9	150	100	250
8 x 14	100	150	250

OPERATING HOURS PER MONTH 350

ISSUED BY (Signature of Manager)
APPROVED BY (Signature of District Manager)
SHIPPED VIA

TOTAL
PLUS
TRANSPORTATION
GRAND TOTAL

SHEETS 1 AND 2 ARE TO BE FORWARDED TO STANDARD. RETAIN SHEET 3.

FORM A-78 F.E.CO.
200 PADS 4-46

STANDARD THEATRE SUPPLY CORP.

78 BROADWAY
BOSTON - MASS.

M&P THEATRES

1

ORDER

SHIP TO Esquire Theatre

ADDRESS 264 Huntington Ave., Boston (Zone) Mass.

VIA CHARGES

CHARGE TO:

ORDER NO. 1

DATE 10/16/46

ITEM NO.	QUANTITY ORDERED	DESCRIPTION OR CATALOG NUMBER ONLY ONE ITEM ON EACH LINE	FOR STANDARD ENTRY ONLY QUANT. SHIPPED	UNIT LIST PRICE	Disc.	AMOUNT	CASH DISC.
1		Maintenance work (itemize work to be done)					
2							
3							
4							
5							
6							
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10							
11							
12							
13							
14							
15							
16							
17							
18							

Three sheets to a set
Mail original and second copy to your
District Manager for approval
Retain third copy for your record

ISSUED BY (Signature of Manager)

APPROVED BY (Signature of District Manager)

SHIPPED

VIA

TOTAL	
PLUS	
TRANSPORTATION	
GRAND TOTAL	

SHEETS 1 AND 2 ARE TO BE FORWARDED TO STANDARD. RETAIN SHEET 3.

FORM 3006 200 PADS 2-46
PRINTED IN U.S.A.

COMPANY
P. O. NO.
1

LAMP REQUISITION—ORDER

DATE

To

RENDER INVOICE IN DUPLICATE TO

% PURCHASING DEPARTMENT AT ABOVE ADDRESS

(DO NOT WRITE ABOVE THIS LINE)

SHIP TO Esquire Theatre
REQ. NO. 1
ADDRESS 264 Huntington Ave., Boston (Zone) Mass.
DATE 10/16/46
VIA
TERMS

IMPORTANT:—FURNISH ALL OF THE INFORMATION REQUIRED BELOW. LAMP DATA BOOK AND PRICE SCHEDULES WILL BE FURNISHED YOU ON REQUEST. SPECIFY CLEARLY THE QUANTITIES REQUIRED, AND DO NOT USE THE TERM "BOXES, CARTONS, DOZENS, ETC".

ITEM NO.	QUANTITY ORDERED	WATT	VOLT	TYPE BULB	COLOR	WHERE TO BE USED	FOR PURCHASING DEPT. USE ONLY		
							UNIT PRICE	DISCOUNT	NET AMOUNT
1	12	150	120	PAR-38					
2	6	25	120	T-6½	Clear				
3	30	60	120	A-21	In. Fr.				
4	120	60	120	A-21	Flametint				
5	120	25	120	A-19	Orange Amber				
6	120	25	120	A-19	In. Fr.				
7									
8									

Five sheets to a set
Mail four sheets to your District
Manager for approval
Retain #5 for your record

ISSUED BY
(Signature of Manager)

APPROVED BY
(Signature of District Manager)

TOTAL

PROMPT ACKNOWLEDGMENT OF THIS ORDER AND CONFIRMATION OF SHIPPING DATE ARE REQUESTED.

IMMEDIATELY ON COMPLETION OF ORDER, PLEASE RENDER INVOICE IN DUPLICATE TO THE PURCHASING DEPARTMENT AT ABOVE ADDRESS.

COPY OF BILL OF LADING, EXPRESS RECEIPT OR SIGNED LOCAL DELIVERY RECEIPT MUST BE ATTACHED TO INVOICE.

BY
PURCHASING AGENT

SEND COPIES 1, 2, 3 AND 4 TO DISTRICT MAINTENANCE DEPARTMENT. KEEP THE NO. 5 COPY.

FORM 3007 200 PADS 3-45
PRINTED IN U.S.A.

COMPANY ______ P. O. NO.

M&P THEATRES

1

TICKET REQUISITION—ORDER

DATE

To ______

RENDER INVOICE IN DUPLICATE TO

% PURCHASING DEPARTMENT AT ABOVE ADDRESS

(DO NOT WRITE ABOVE THIS LINE)

SHIP TO Esquire Theatre

REQ. NO. 1

ADDRESS 264 Huntington Ave., Boston (Zone) Mass.

DATE 10/16/46

VIA

TERMS

NOTE:—WRITE ONLY ONE ITEM ON A LINE. UNDER THE HEADING "TYPE" SPECIFY CLEARLY WHETHER R (ROLL), M (MACHINE), P (PADDED), OR C (COUPON). UNDER "STYLE" PLEASE INDICATE "REGULAR", "PASS", 10¢ SERVICE PASS, EXCHANGE, AFTER CLOSING, ETC. IF SPECIAL TICKET IS CALLED FOR, PLEASE ATTACH SAMPLE LAYOUT TO THIS REQUISITION.

ITEM NO.	QUANTITY ORDERED	TYPE	STYLE	NET PRICE	TAX	GROSS PRICE	COLOR	NUMBERED FROM	NUMBERED TO	SPECIAL WORDING
1	60M	M		46	09	55	Buff	120,001	180,000	Window #1
2	50M	M		46	09	55	Buff	90,001	140,000	Window #2
3	1M	Pad	After Closing	46	09	55	Buff	10,001	11,000	
4	1M	Pad	Exchange	07	01	08	Salmon	7,001	8,000	
5	5M	Roll	Free Pass	09		09	Buff	15,001	20,000	
6										
7										
8										

Five sheets to a set
Mail four sheets to your District
Manager for approval
Retain #5 for your record

ISSUED BY
(Signature of Manager)

APPROVED BY
(Signature of District Manager)

TOTAL

QUANTITY PRICE $______

COPY CHANGES ______@______$______

OTHER CHARGES $______

TOTAL COST

PROMPT ACKNOWLEDGMENT OF THIS ORDER AND CONFIRMATION OF SHIPPING DATE ARE REQUESTED.

IMMEDIATELY ON COMPLETION OF ORDER, PLEASE RENDER INVOICE IN DUPLICATE TO THE PURCHASING DEPARTMENT AT ABOVE ADDRESS.

COPY OF BILL OF LADING, EXPRESS RECEIPT OR SIGNED LOCAL DELIVERY RECEIPT MUST BE ATTACHED TO INVOICE.

BY ______
PURCHASING AGENT

SEND COPIES 1, 2, 3 AND 4 TO TICKET REGISTER BUREAU, HOME OFFICE. KEEP THE NO. 5 COPY.

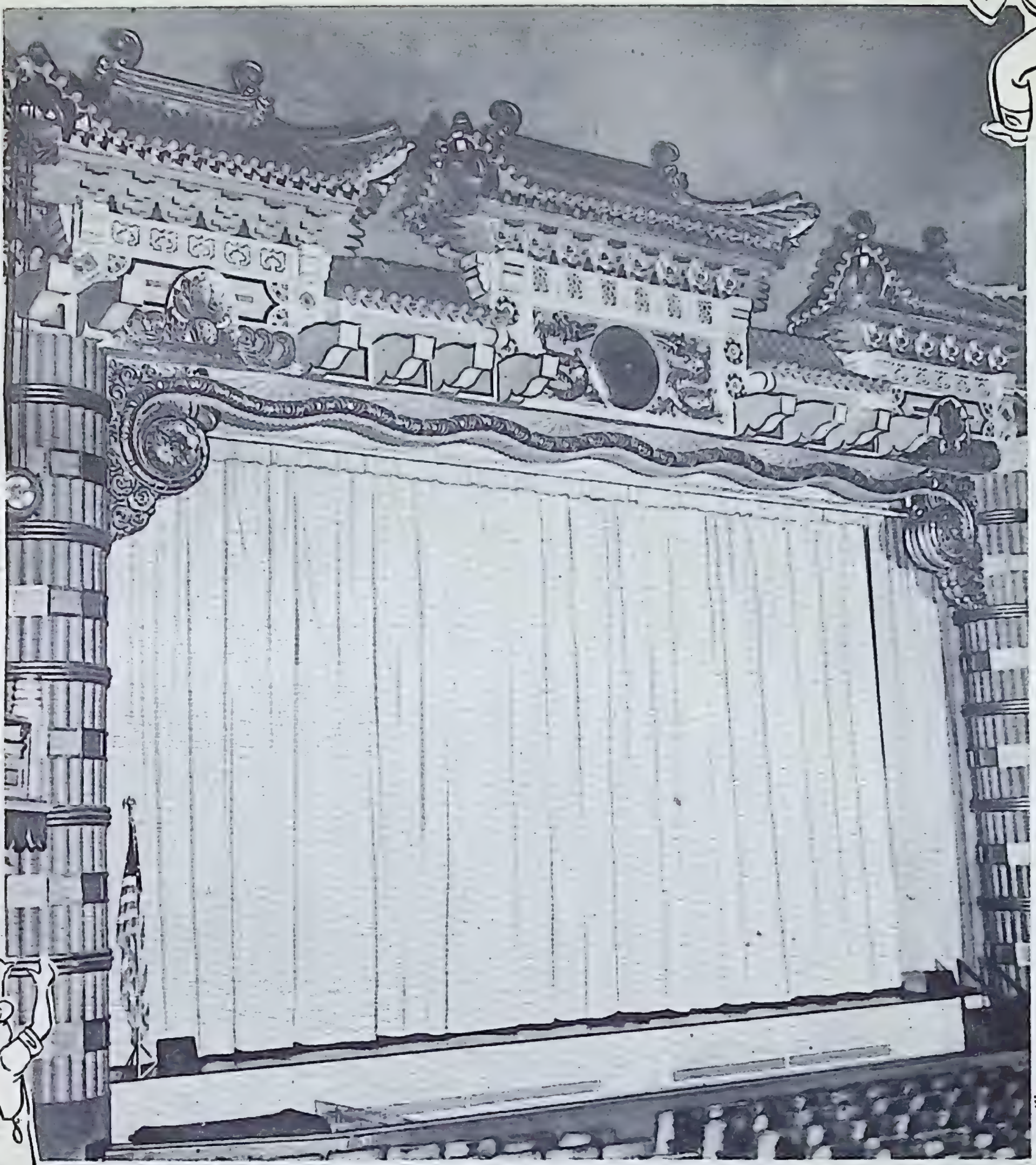
M&P
THEATRES

STAGE

STAGE

Maintenance Manual

STAGE Maintenance



REGULAR AND THOROUGH INSPECTION ...
A NECESSITY FOR THE MAINTENANCE OF YOUR STAGE!

STAGE Maintenance

STAGE MAINTENANCE

Proper care, precautions and maintenance should be observed constantly to keep the stage and its physical properties in a clean, safe condition at all times.

ASBESTOS CURTAIN

A. Cables and endless line should be examined frequently for possible fraying and any weakness.

B - Sheaves and headblocks should be lubricated at least twice a year.

C - Accumulation of excessive dust can be eliminated by using long handle corn broom and sweeping in down strokes from upper to lower section.

D - Trigger on asbestos curtain should be adjusted to hold properly.

E - Asbestos curtain should work freely when released. If it does not, counter weights should be evenly balanced.

CAUTION: Do not change balancing of weights to facilitate easy operation.

TRAVELER CURTAIN

The Traveler Curtain should be lowered and inspected every six months in order to:-

A - Check condition of webbing and snap hooks attached to webbing. Replace broken hooks and repair by sewing with strong thread any loose webbing.

B - Check king carriers and carriers.

C - Check for signs of fraying on rope or cable.

D - Check pulleys for lubrication.

E - Check for proper trim.

CURTAIN CONTROLS

A - Motor and relays should be checked once a month and kept properly lubricated and clean.

B - Contact points should be cleaned once a month. If poor contact exists, use fine sandpaper or emery cloth on the points.

FOOTLIGHTS - SIDELIGHTS - BORDERLIGHTS

A - Footlight trough should be cleaned weekly.

B - Check for loose sockets and bad connections.

C - Replace burned out lamps.

D - Do not overload by using too much wattage.

E - Footlight trough should be painted a FLAT WHITE to increase illumination. CAUTION: do not use enamel, as this causes too much reflection.

F - Borderlights should receive the same care as in the footlights, and in addition the cables, sheaves, and headblocks should be checked frequently for wear or lack of lubrication.

PICTURE SHEET

A - Examine for tears and cleanliness. (Refer to that section of the manual referring to SCREEN CARE).

B - Examine sheaves, headblocks, cables and endless line for any fraying or lack of lubrication.

C - Where possible, screen should be raised head high at termination of evening performance to allow access for the cleaning of floor.

D - Floor should be properly marked so that the screen hits the same position when it is lowered.

E - The screen should be attached to floor securely to prevent swaying of and change of position.

F - All masking should be checked often for cleanliness.

G - For theatres using MAGNASCOPE:

1 - Check pulleys and lines for wear or lack of lubrication.

2 - Check relay points and motors on automobile magnascope for proper lubrication and cleanliness.

WATER CURTAIN

A water curtain is a perforated pipe located above the front part of the stage, behind the asbestos curtain. It is controlled by a quick opening valve at the proscenium wall, next to the switchboard.

CYCLORAMA - SIDE TABS - LEG DROPS - BORDERS AND GRAND DRAPES

The hemp line should be checked frequently for fraying or dry rot.

All rigging should be checked for fraying or improper operation.

All hanging material should be trimmed weekly or oftener if necessary, due to change of weather conditions.

Check for proper masking.

Keep cyclorama - side tabs - leg drops and borders fireproofed and clean.

STAGE VENTILATORS

The stage ventilators should be checked once a month for free operation.

1 - check shutters; 2, check pulleys and lines; 3, see that fusible links are properly attached.

Housing protecting shutters on roof should be painted frequently to prevent rusting or deterioration.

Lines controlling vents should be properly marked on stage.

A sharp knife, attached to chain, should be permanently located at this spot in case of fire, smoke, or an emergency operation.

In case of glass housing over shutters, asphaltem should be applied to keep out the light, and broken glass should be immediately replaced.

Gutter and flashing around housing should be kept clean and in good repair.

DIMMERS

The arms for dimmer plates should be lubricated twice a year.

Dimmer plate points should be cleaned with carbon tetrachloride twice a year.

Word brushes or contacts should be replaced.

Be sure that the dimmer arms operate so that the lights will go from a full on to a dim-out radius on the contact plate. If this does not occur, call your maintenance department. This can cause over - heating of the rheostat, which in turn will not give full benefit of light.

Check for dead points on the plate. If this condition exists, the dimmer should be taken out, and repaired or replaced.

SWITCHBOARD

The switchboard should be marked properly and clearly for quick and efficient operation.

Bus bars, switches, and contact points should be kept tight.

Watch for any overloading of branch circuit. All branch circuits must be checked for amount of wattage used to prevent over-loading.

Switch blades should be checked for any heating or arcing caused by looseness or dirt.

Points or relays should be checked for cleanliness and easy operation.

Do not allow any storage of materials in, around or near switchboard or dimmers. Have pail of sand accessible at switchboard. Keep entire area inside and outside clean.

Stage Pockets

Keep clear and free from dirt. All portable equipment, such as olivettes, spot lights and bunch lights, cable and plugging boxes, should be properly stored when not in use. When in use, they should be placed so that they do not present a hazard. If plugging boxes are in use, be sure all plugs are tight, and no loose connections exist.

Gridiron

Keep clean and clear of all obstructions. Do not store anything in this area.

Examine headbox and sheaves to see that they are tight and properly clamped or bolted to gridiron.

Sound Horns

Cables feeding units should be suspended off floor to permit passage.

Units should be backed up with monks cloth, any available old drop or absorbing material. This will prevent reverberation of sound and will keep lights from the stage from showing through the screen. Have this covering enclose the entire area where the units are located.

Caution - Do not move sound horns under any condition.

Turnbuckles

Be sure all turnbuckles are pulled taut to take up all slack in guide cables.

Make sure they are properly anchored to floor:

Pin Rails

Make sure they are securely anchored to floor or wall.

Make sure all lines are tied to pin rail securely. All loose rope should be coiled and hung on pin.

Counterweights

Counterweights not in use should be stored away neatly.
Sandbag counterweights should be checked for tears causing sand to seep out. Also check bag tie-offs frequently.

Staircases-Ladders-Walks

All Spiral Staircases, Iron Ladders and Metal Walks leading to flyfloor and gridiron should be:

- checked for firmness

- kept painted to prevent rust and deterioration.
- kept clean and clear at all times.

Dressing Rooms

Check daily for improper plumbing and loose light fixtures.

Check for broken glass in windows.

Keep this area clean and free from all rubbish.

When not in use all dressing rooms should be kept open.

Boomerangs and Light Towers

Where these are used, precautions should be taken to see that all lamps in said equipment are well secured.

Public Address Systems

Public address systems should be checked weekly for volume and tone. They must always be ready for emergency use.

If volume or tone is not proper have it serviced by your maintenance department.

Microphone and amplifier should be covered and stored carefully when not in use.

Fixtures

Check daily all lights in house.

House lights should be checked once a month, chandeliers and indirect lighting.

All stage lighting (except borders and footlights) should be properly shaded to prevent interference with picture on screen.

Proscenium

Panic lights on proscenium arch must be checked each day.

Where feasible, dust frequently using high ladders.

Storage Equipment

Do not use "under stage" area for storage drops or any combustible material. This is hazardous.

Music stands, bunch lights, chairs and cables should be stored away neatly in a spot not hazardous to passage.

Do not allow old signs, lumber or any unnecessary material to accumulate. Keep on hand only the minimum needed.

Storage of Lighting equipment, lamps, etcetera should be stored neatly under lock and key. A perpetual inventory should be maintained for all supplies used. Dead lamps should be disposed of. An ample supply of necessary fuses should be kept stored and easily accessible for emergency use.

Batons-Pipe and Wood

Wooden batons should be examined for material loosening on edges. All batons should be securely attached to scenery.

Trap Door

Trap doors should be maintained properly, kept tight and flush with floor.

CAUTION

When not in use all trap doors must be securely closed.

Stage Safety Precautions

Fire hose should be laid out and brushed once a month. They should be tested for proper operation once a year. Water valves feeding hose should be checked once a month. Nozzles should be checked once a month for possible blockage.

Extinguishers

Refill annually or sooner if used. Check weekly to be sure they are filled. Extinguishers should be PROPERLY TAGGED WHEN RECHARGED. Keep clean and polished. Nozzles should be checked weekly for any possible obstruction.

Fire Axes and Fire Hooks

One ax and one hook should be located on each side of stage. These should be attached on wall to be easily accessible and are not to be used for any purpose other than fire.

Sand

A pail of sand should be stored on each side of stage. Do not allow rubbish to accumulate in pails. Keep pails filled with sand at all times. Have scoop in each pail. Pails should be painted red.

Fire Doors

All fire doors leading from stage to auditorium should be self-closing and kept closed at all times.

Smoking

No Smoking signs should be posted on each side of stage.

Exit doors on stage should be tested daily. Doors should be checked daily for free movement. All areas outside doors should be clear and clean at all times. Lights should be provided both inside and outside.

A set of rules and regulations governing fire control should be posted under a glass frame on stage. Rules and regulations can be obtained from municipal building or fire department.

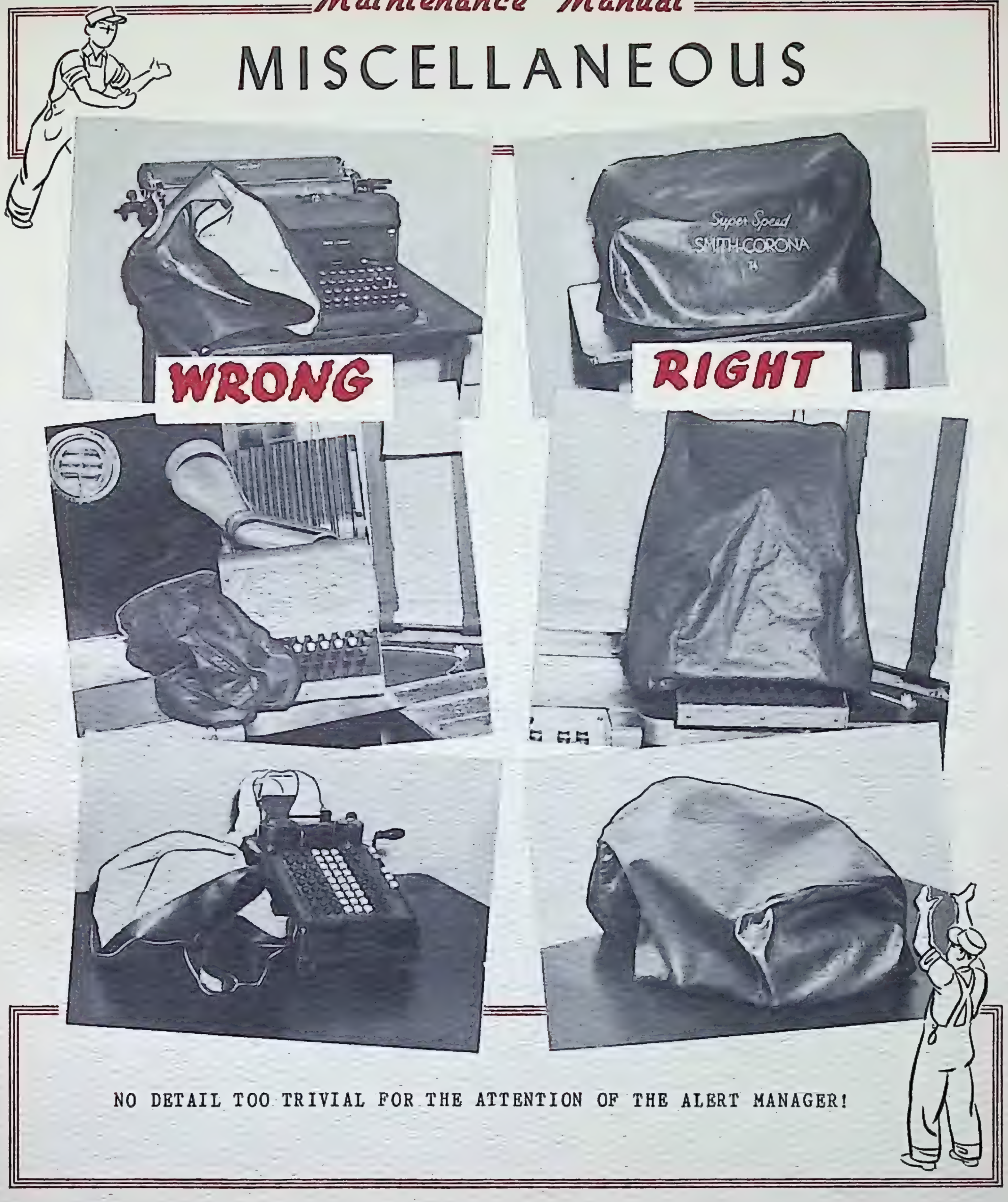
Alarm signals should be tested monthly. Batteries should be renewed when low. Alarm signals should be illuminated and marked with identifying sign.

Sprinkler Systems

Wherever located on the stage area, the sprinkler cut - off should be known by Manager and enough employees on premises to assure safeguarding, in case a head is accidently set off.

MISCELLANEOUS

MISCELLANEOUS


WRONG
RIGHT
Super Speed
SMITH-CORONA

NO DETAIL TOO TRIVIAL FOR THE ATTENTION OF THE ALERT MANAGER!

MISCELLANEOUS

INSULATION.

We recommend insulation as a practical means of eliminating cold and heat. It is also a means of saving. Check with your maintenance dept. for expert information.

FIREPROOFING:

Fireproofing liquid or solution is obtainable from your Maintenance Department. This can be applied, following manufacturer's instructions, to all surfaces requiring fireproofing, by either a manually or electrically controlled spray machine.

Fireproofing can often last more than a year, but frequent checks are necessary to ascertain effectiveness.
Inspections should be made at least once a year.

REAL ESTATE:

In instances where managers handle the theatres, as well as commercial properties, it is important to assume the proper attitude and responsibility of tenants involved. Where there are vacancies, make sure that you always have:

A. Fresh, clean, FOR RENT Signs in center of store or office window.
B. Stores especially must be kept clean and neat at all times.
C. Store windows should be white washed, as this will improve the appearance.
D. Proper supply of heat for tenants should be followed through regularly.
E. Snow removal and icy sidewalks in front of theatre properties should be followed through carefully.
F. Cleanliness of halls and lobbies of property, should be checked regularly.
G. Gutters----Stoppages are costly; therefore, have gutters checked regularly. Avoid leaves, pebbles, etc.
H. Be sure to take necessary precautions against freezing.

Roofs

Leaky roofs can cause considerable damage to plaster, painting and decorating.
Your roof, roof flashing and drains should be checked each month, and any defective flashing or deteriorated roofing should be reported to your Maintenance Department immediately. Please do not wait until your roof develops a leak before reporting this.

Roof Flashing

Check for cracked flashing, loose flashing, loose or broken capping on the parapet. Inspect all cornices.

Roof Drains

Be sure that the roof area is kept clean and that there is no accumulation of loose gravel or dirt around the roof drain outlet. Be sure that all roof drain outlets are equipped with screen mesh to prevent foreign matter from flowing into the drain.

Do not allow erection of aerials or any obstructions on your roof area.

Check all penthouses or metal enclosures on the roof to make sure that they are weather tight and free from leaks.

Replace cracked glass on all penthouses immediately.

Examine section of roof where steel work for signs and marquees is anchored to make sure that it is free from leaks.

Care should be taken not to allow excessive amount of snow to remain on the roof or skylights, and when snow is removed, allow a thin layer to remain so that roof will not be damaged by snow removal.

Make sure that there is access to all roofs.

Be sure that all metal work on roofs and roof areas is painted.

Report any loose mortar joints on outside of building.

ATTICS.

Catwalks should be installed and properly maintained in all attics.
Attics should be properly lighted with switch at entrance to attic.
CAUTION - Under no conditions should anyone walk on attic plaster.

ORGANS AND PIANOS:

When not in use, these should be properly covered. All organ areas (instrument, blower room, organ chamber, etc.) should be kept clean and sprayed against moths, vermin, and rodents.

ORGAN ELEVATORS:

These should be properly maintained. All motor controls should be greased and oiled, according to manufacturer's instructions. When elevators are not regularly used, they should frequently be inspected and raised and elevator wells should be kept immaculately clean.

FURNITURE:

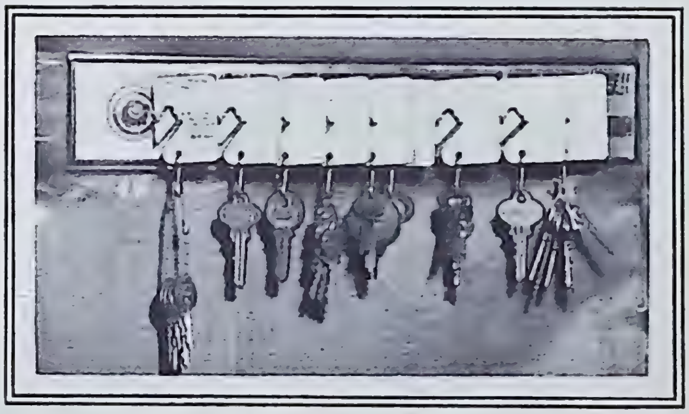
All upholstered furniture should be frequently sprayed with insecticide.
Furniture should be moved often to allow for thorough cleaning. Watch for slight tears and have them repaired before hole spreads causing need for entire upholstering job.

Polishing Furniture

The proper and most practical procedure to follow through is:
Use a wet piece of cheese cloth with clean WARM WATER - apply a small amount of our cream type furniture polish and rub surface in a STRAIGHT LINE MOTION (not circular), then polish surface with a clean soft dry cloth.

HANDRAILS - CHECK REGULARLY FOR LOOSENESS

All handrails and standeerails should be properly geared to floor.
Metal rails should be painted frequently and joints inspected for looseness or burring.
Wooden rails should be inspected for splintery conditions, and when such occur, that section should be sandpapered down smoothly.



KEYS

The question of keys seems inconsequential - actually it is an important maintenance matter that can be troublesome. Therefore, to avoid unnecessary delay and difficulty, we recommend:
First - A special cabinet for one set of duplicate deys for all important departments. Such keys to be CLEARLY MARKED in order to be easily located immediately. Would be put away in the safe

easily accessible in case keys from cabinet are mislayed.

Second - Keys should be hung in your cabinet ALPHABETICALLY -- Example: A - air conditioning, B - Boiler rooms, B - Booth, C - Cleaning rooms, etc.

FALSE FLOORS IN ORCHESTRA PIT:

These should be properly maintained and kept constantly cleaned.

Pit floor attachments such as rails, electric plugs, etc., shouldbe inspected often.

FIRST AID CABINETS:

A first aid cabinet with essential needs for cuts, burns, etc., should be provided in manager's office, projection room, boiler rooms, and on stage.

These cabinets should be properly stocked, and all medicines which lose strength after certain lapse of time, should be replaced with fresh stock REGULARLY.

ADDING MACHINES - CHANGE MACHINE - TYPEWRITERS

Dust and dirt will destroy the mechanism of machines as quickly as actual wear; therefore, the important thing to remember is: First keep the machine covered when not in use - second, a thorough cleaning with a suitable brush should be made regularly. A few seconds each day to cover all machines, will increase life of machines from one to three years.

SCALES:

Do not try to adjust any weighing devices on scales. Call maintenance department.

Lighting attachments to scales should be properly maintained.

DOOR CHECKS

Door checks should be properly maintained. Frequent attention should be given to make sure check is securely fastened.

Universal door checks can work from either the right or left side. Some door checks have adjustable springs that must be changed over before installing.

If door check is for right hand door and needs to be installed on left hand door, be sure that proper spring adjustment is made.

An adjustment is usually found on every door check. Tightening this screw causes fluid inside cylinder to flow slower, and acts as a break, loosening the screw causes the fluid to flow faster, and the door closes with greater speed. When the adjustment screw is tightened full-up and door bangs, have the check sent out for adjustment and re-packing.

Packing inside door checks consists of glycerine solution mixed with alcohol. When new packing is necessary new washers should replace the old ones.

GAS JETS:

Always see that pilot is on.

Replace broken mantles immediately, keep a good reserve supply on hand.

Replace missing or broken chain levers controlling flow of gas for emergency use.

Often gas jets are used for lighting purposes, especially by cleaners. This practice should be discouraged. Gasjets should only be used in emergencies.

Daily inspection of gas jets is required. Make sure jets open and close without difficulty.

CAUTION: In case of gas leaks or any improper working conditions, CALL MAINTENANCE DEPARTMENT.

HOUSE CALLS:

House phones should be handled carefully at all sub-stations. Do not permit careless handling, as instruments are very delicate and can break easily or go out of adjustment.

CAUTION: WHEN HOUSE PHONES DO NOT WORK PROPERLY, DO NOT ALLOW ANYONE TO ATTEMPT TO ADJUST SETS. CALL YOUR MAINTENANCE DEPT. FOR THESE PARTS.

Make sure that your phone receiver is on at all times. Negligence creates short circuit and often puts the phones out of commission.

In house phones where you have a number dial, it is important that, after calling a station, you turn dial back to its original station when call is completed.

PORTABLE ELECTRIC HEATERS

These are the "plug in" type electric heaters used in box offices, etc. These heaters should not be "plugged in" to your regular light circuits, but should have a separate circuit to carry their high wattage load. As the load on the various types runs from 660 to 1300 watts, the necessity for a separate circuit is readily seen.

The heaters should be kept clean.

The open unit type should be used only in an area free from all combustible material such as paper, cloth, etc.

We do not recommend the use of open element heaters.

THE HANDY MAN

In some theatres, odd painting jobs are being done by the handy man. THE COMPANY DOES NOT APPROVE OF EXTENSIVE DECORATIVE PAINTING BEING DONE BY ANY THEATRE EMPLOYEE who is not familiar with blending of colors. A small touch up job, such as painting of base boards, ushers' and cleaners' closets, back stage rooms, etc., may be allowed by the manager, but should be confined to the above mentioned locations.

CARE OF PAINT BRUSHES

Brushes like any other tools must have proper care and use. Good paint brushes whether large or small are expensive; therefore, they should be given attention, not simply strewn around carelessly, when the latter occurs, paint brushes dry up and become useless.

PROPER MAINTENANCE OF FLOORS

1. WOOD FLOORS:

First, remove all gum with a putty knife. Sweep clean then mop or scrub with LUKE WARM WATER. Use water sparingly. A damp mop and proper soap will do a fine job. Rinse thoroughly with clear COLD WATER. A little varnish can be used - but DO NOT WAX!

2. TILE ASPHALT FLOORS:

First, remove all gum with a putty knife. Floors can be properly cleaned with puroall mixed with luke warm water supplied by maintenance department. Do not use hot water, as it may crack the tile; don't scrub, and do not wax floors, as it creates a dangerous accident hazard, but water wax may be used.

3. CONCRETE FLOORS:

First, remove all gum with a putty knife. Sweep thoroughly; mop or scrub with WARM WATER and purgall supplied by the maintenance department. Follow directions thoroughly and use water sparingly.

MOP PAILS

Cleaners should be instructed never to fill pails with water to the extreme top. Three to four inches away from the top is more practical, also eliminates unnecessary spilling of water.

SUMP PUMPS

Sump pumps must be kept clean.

Strainers should receive special attention, as dirty strainers can cut down the suction and stop the pump.

All submerged parts of the pump should be kept clean by using a wire brush to remove corrosion and other deposits.

Motors should receive the care specified under Electric Motors.

Float switches should operate correctly, and all electric wiring should be tight. The float valve should be checked for correct operation and the float for buoyancy.

Pits should be kept clean, as dirty pits are a frequent cause of clogged strainers which result in the failure of the pump to operate. To prevent dirt and other foreign matter from falling into the pit ALL PITS SHOULD BE COVERED.

The electricity for the operation of the sump pump must be supplied from a circuit that is "alive" at all times and NOT CONTROLLED BY A SWITCH.

Pumps should be repacked once a year or more frequently if a loss of suction is noticeable. Report any overheating of motor to Maintenance Department.

UNIFORM AND SMOCKS

Hand-me-downs are no disgrace. In families it is a common occurence to hand down clothes from one child to another.

In theatre maintenance, the matter of hand-me-downs should be given consideration, as uniforms and smocks are by no means a small expense item. Therefore, do not allow them to hang in your closet waiting for a new boy or girl to be hired to fit the outfit, it is more practical and economical to hand such uniforms down to smaller theatres after they show wear, or if it is impossible, to fit them to any member of your staff. A suitable credit should be given to the theatre involved.

UNIFORMS AND SMOCK MAINTENANCE

1. Make sure that all uniforms and smocks are properly hung by the wearer at the end of each performance.

2. Educate your employees to notify management of tears, loss of buttons, etc.

3. If you haven't a suitable rack, build one so that uniforms can be easily and properly hung up and make sure that each uniform is covered with a cellophane jacket, as dust is a quick destroyer of clothing.

4. Uniforms must be properly cleaned weekly.

5. Necessary repairs should also be made which should include replacing and tightening of buttons and mending of rips, bindings and M & P Seals should be given proper consideration.

VENETIAN BLINDS

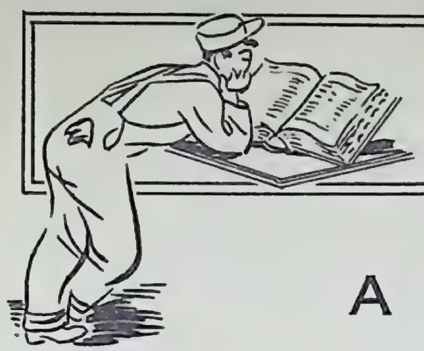
The appearance of venetian blinds can easily be destroyed by lack of care and attention. Daily attention should be given by cleaners to keep up the general appearance of blinds in the following simple manner:

1. Dust each day with a small feather duster, using a STRAIGHT ACROSS MOTION NOT UP AND DOWN, as this will disarrange the slats.

2. Clean weekly with a damp cloth using COLD WATER and a small amount of soap, hot water and too much soap will quickly wear off the finish.

GLOSSARY

GLOSSARY



G L O S S A R Y

A

ABERRATION. A deviation from perfection in the performance of a lens which impairs the definition or shape of the image it forms. See Astigmatism. Chromatic Aberration. Coma, Distortion, Spherical Aberration.

A.C. Alternating Current.

ACETATE FILM. A motion picture film whose base is composed principally of cellulose acetate.

ACHROMATIC LENS. Briefly, a lens free from chromatic aberration. In optical usage the expression is usually limited to lenses in which chromatic aberration has been corrected for two wave lengths, leaving some residual chromatic aberration for other wave lengths.

Just as there are two kinds of chromatic aberration, longitudinal and radial, there are two kinds of achromatic lenses: (1) lenses like telescope and microscope objectives for which images for two colors must lie in the same plane, and (2) lenses like eyepieces and magnifiers for which it is important that the images be of the same size for two colors. Distinguished from: Apochromatic Lens.

ACOUSTICS. (1) The science of sound. (2) ACOUSTICS OF AN ENCLOSURE: The hearing and recording conditions within an enclosure such as a theatre or sound recording stage. The reflection and absorption of sound within the enclosure are factors affecting its acoustic conditions.

ACOUSTIC ABSORPTIVITY. The acoustics absorptivity of a surface is equal to one minus the acoustic reflectivity of the surface.

ACTINIC LIGHT. Radiant energy whose wave length is such that it is able to cause chemical reactions or electrical effects to take place. Particularly, light which can form a photographic latent image or activate a photoelectric cell.

A. F. Audio frequency.

AIR CLEANER. A device designed for the purpose of removing air-borne impurities such as dusts, fumes and smokes. (Air cleaners include air washers and air filters.)

AIR CONDITIONING. The simultaneous control of all or at least the first three of those factors affecting both the physical and chemical conditions of the atmosphere within any structure. These factors include temperature humidity, motion, distribution, dust, bacteria, odors and toxic gases, most of which affect in greater or lesser degree human health or comfort.

AIR WASHER. An enclosure in which air is forced through a spray of water in order to cleanse, humidify, or dehumidify the air.

AISLE. A passageway in the seating area of a theatre. CENTER AISLE: An aisle on the longitudinal axis of the auditorium. CROSS-OVER: A transverse aisle. INTERMEDIATE AISLE: Any longitudinal aisle that is not a center aisle or a wall aisle. WALL AISLE: An aisle along one of the side walls. WALL AISLE: An aisle along one of the side walls of the auditorium.

AISLE LIGHTS. Fixtures mounted on end-chair standards, designed to illuminate aisles only.

AMPLIFIER. A device for increasing the amplitude of electric current, voltage, and/or power, through the control by the input power of a larger amount of power supplied by a local source to the output circuit. Specifically, (1) a vacuum tube used for this purpose; (2) the whole circuit of which such a tube is the essential element.

AMPLITUDE. The maximum height, or maximum depth, of a wave, measured from its base line or middle position. One-half the distance through which each part of the medium carrying the wave will vibrate from the time a crest passes to the time the next trough passes. The energy contained in a wave varies as the square of the amplitude of the wave.

ANAGLYPH. A type of stereoscopic reproduction in which two pictures representing the scene as observed from two different positions are reproduced in contrasting colors and viewed simultaneously, each eye being screened from the image seen by the other eye by suitable light filters. If the images are orange and cyan, they may be viewed through spectacles which restrict the light seen by the viewer's eyes to blue and red respectively.

ANASTIGMAT. Briefly, a lens free from astigmatism.

ANODE. Positive terminal of an electric device (cell or tube), at which the current (in the conventional direction) enters the device.

APERTURE. The apparent diameter of a lens viewed from the position of the object against a diffusely illuminated background, such as a sky. PICTURE APERTURE: The rectangular opening in a metal plate at which each frame of the motion picture film is situated during exposure, printing, or projection. APERTURE: The ratio of the focal length of a lens to its effective aperture for an object located at infinity. See f/ number.

APERTURE PLATE. A metallic plate in a camera, printer, or projector containing the picture aperture.

APERTURE STOP. The obstruction or element in an optical system which cuts off or limits the marginal rays of light which can pass from the object to the image.

APOCHROMATIC LENS. A lens which is corrected for chromatic aberration in such a way as to make the images for three different colors of light coincide in size and position. See Achromatic Lens.

ARC. Column of very hot, light-emitting gas, carrying an electric current sustaining this condition.

ARC, MIRROR or REFLECTOR. Projection arc with a concave mirror placed back of it to reflect and concentrate the light.

ASPHERIC. In general, non-spherical: in optics, usually applied to surfaces of revolution generated by the revolution of a curve other than a circle, such as a parabola.

ASTIGMATISM. One of the aberrations of lenses: A variation in the position of the image of a point object off the axis with the meridian of the oblique pencil of light involved in the image formation. The greatest difference will be found between the image position for the principal meridian, that one which contains the axis of the lens (called the tangential meridian), and that meridian at right angles to it (called the sagital meridian). A lens having astigmatism is unable to image horizontal and vertical lines in the same plane with equal sharpness.

ATTENUATION. Weakening of intensity.

AUDIO FREQUENCY. A frequency of vibration corresponding to a normally audible sound-wave. Audio frequencies for good hearing range roughly from 20 to 15,000 cycles per second.

AUDIO-FREQUENCY AMPLIFIER. Magnifies currents whose frequency of alternation lies in the audio-frequency range.

AUDION. Three-electrode vacuum tube.

AUDITORIUM. The space in a theatre from any point of which the performance can be viewed. RIGHT SIDE: The right-hand side of the auditorium, looking toward the screen. LEFT SIDE: The left-hand side of the auditorium, looking toward the screen.

AUDITORIUM FLOOR PITCH. COMBINATION PITCH A floor which slopes downward and then upward toward the front wall of the auditorium. DOWN PITCH: A floor which slopes in part or whole downward toward the auditorium, front wall to provide sight line clearances.REVERSE PITCH: A floor which slopes upward in part or whole toward the auditorium front wall to provide raised seating levels located near to a motion picture screen so as to bring these seating levels as close to the screen level as possible. UNIFORM PITCH: A floor having an equal rise or fall for each row of seats.

AUDITORIUM FRONT WALL. A false wall or structural wall at the front of the auditorium on the audience side of the screen.

AUDITORIUM LIGHTING. Any lights in use in the auditorium when the motion picture show is not in progress.

B

"B" POWER SUPPLY. Device for current supply in the plate circuit of a vacuum tube.

BACK FOCAL LENGTH. The distance from the back of the lens to the film in the gate while the image is in focus on the screen.

BACK-FOCUS. Distance from the principal focus of a lens (behind the lens) to its nearest face.

BACKLASH. "Play" or looseness of a screw or bolt in its fitting.

BAFFLE: A wall or block for the absorption of sound.

BAFFLE. A plate or wall for deflecting gases or fluids.

BASE. The transparent, flexible support, commonly cellulose nitrate or acetate sheet, on which photographic emulsions are coated to make a motion picture film.

BASIC FREQUENCY. The basic frequency of any wave is that frequency which is considered to be the most important. In a driven system, it would in general be the driving frequency, while in most periodic waves it would correspond to the fundamental frequency.

BLACK LIGHT. Radiant energy lying outside in the visible range, especially light in the near ultra-violet region of the spectrum which is converted to visible light by the action of suitable fluorescent materials.

BLAST HEATER. A set of heat transfer coils or sections used to heat air which is drawn or forced through it by a fan.

BLEEDING (of color). The diffusing of dye away from a dye-image; most noticeable where dark areas adjoin light areas in a picture.

BLOOP. The sound produced when an imperfect splice in a sound track passes through the sound reproducing mechanism of a motion picture projector.

BLOOPING INK. Opaque (black) ink used to cover the joint of a sound track splice to prevent the splice from making a noticeable noise when passing through the projector.

BLOOPING PATCH. Triangular or oval black section introduced over a splice in the positive sound track, to prevent the noise which the splice would otherwise cause during reproduction. The patch effects a relatively gradual diminution in the transmitted light, followed by gradual restoration to the original value. The sound frequency due to a properly blooped patch is too low to be heard.

BOILER HEATING SURFACE. That portion of the surface of the heat-transfer apparatus in contact with the fluid being heated on one side and the gas or refractory being cooled on the other, in which the fluid being heated forms part of the circulating system; this surface shall be measured on the side receiving heat. This includes the boiler, water walls, water screens, and water floor.

BOX LIGHT. A lamp, consisting of a cluster of incandescents mounted on a pedestal stand. Unlike the bunchlight, it does not include a reflector.

BRIDGING AMPLIFIER. Any amplifier or relatively high input impedance, so that a number of such units may be connected in multiple across a relatively low impedance circuit without materially affecting its electrical condition and without reaction on one another. Abbreviated B. A.

BRILLIANCE. The characteristics of a color which determines the intensity of the sensation it produces in the eye of an observer.

BRITISH THERMAL UNIT. A unit of energy defined in terms of the international steam-table calorie through the convenient relation 1 BTU per pound per degree Fahrenheit = 1 cal per gram per degree Centigrade. It is approximately the quantity of heat required to raise the temperature of 1 lb. of liquid water from 63 to 64 F.

BRUSH. A device for making electrical contact between the rotating commutator of a generator and the stationary circuit wires. Brushes are made from carbon, copper wires, copper strips and copper gauze, but carbon brushes are most largely used.

BRUSH LOSS. Loss, in watts, due to lack of perfect electrical contact between brush and commutator. May be greatly increased by dirty brushes, dirty rough commutator, or lack of sufficient pressure between brushes and commutator.

BTU. See British Thermal Unit.

BUCKLE. Unflatness of a motion picture film due to the edges shrinking while the film was in the roll.

BUNCHLIGHT. A floodlight containing up to ten or more incandescent lamps, mounted on a pedestal stand.

B. X. A flexible metal tubing for the protection of electric wires, much used for interior work. A flexible metal conduit.

BY-PASS. A pipe or duct, usually controlled by valve or damper, for conveying a fluid around a main control valve or damper.

C

"C" POWER SUPPLY. Device for supplying current to apply a grid bias; connected between the cathode and grid of a vacuum tube.

CAM. In general, a non-circular rotating piece in a mechanism. In particular, the device which operates the intermittent movement of the film in a motion picture camera, printer, or projector.

CAMERA ANGLE. The angle of view taken by a motion picture camera in photographing a scene, usually referring to the angle in a horizontal plane but it may be used as the angle in any plane.

CANDLE. The unit of luminous intensity. In the United States a specified fraction of the average horizontal candle power of a group of 45 carbon-filament lamps preserved at the National Bureau of Standards.

CANDLEPOWER. Luminous intensity expressed in candles.

CAPACITANCE. The measure of the quantity of electricity a condenser can hold. It equals the quantity stored divided by the voltage (pressure) storing it.

CAPACITY, CARRYING. Current a conductor can carry without becoming overheated.

CARBONS. The carbon rods or pencils used in an arc lamp.

CARBON JAW. The jaw of an arc lamp by means of which carbons are gripped and held in place.

CARRYING CAPACITY. The greatest number of amperes an electrical conductor can safely carry.

CEL SIDE, CELLULOID SIDE. On a motion picture film which carries an emulsion on one side only, the side on which the base is exposed or which is opposite to the "emulsion side."

CENTRAL FAN SYSTEM. A mechanical indirect system of heating, ventilating, or air conditioning, in which the air is treated or handled by equipment located outside the rooms served usually at a central location, and is conveyed to and from the rooms by means of a fan and a system of distributing ducts.

CHANGE-OVER. In projection, the act of changing from one projector to another, preferably without interrupting the continuity of projection: or, the points in the picture at which such a change is made.

C

CHARACTERISTIC, CHARACTERISTIC CURVE. Graph showing the essential features of the performance of a photo-electric cell, vacuum tube, photographic emulsion, or other piece of apparatus. For a film, the curve shows how transmission, or density, varies with exposure.

CHIMNEY EFFECT. The tendency in a duct or other vertical air passage for air to rise when heated, owing to its decrease in density.

CHOKE, CHOKE OIL. Coil of wire wound on an iron, core and thus possessing high inductance.

CHROMATIC ABERRATION. The failure of a lens or optical system to unit into a common focus the rays of light of different wavelengths eminating from a point - object. The variation in image position with wavelength may be in respect to (1) distance from the lens to the image in the direction of the optical axis (longitudinal chromatic aberration), or (2) distance from the optical axis to the image in a direction at right angles to the axis (radial chromatic aberration).

CINCH MARKS. Short scratches on the surface of a motion picture film, running parallel to its length, and caused by improper winding of the roll which permitted one coil of film to slide on another.

CINE. A prefix used to refer to the motion picture art, or motion picture apparatus; probably originating as an abbreviation for cinema or cinematograph.

CIRCUIT BREAKER. A device, somewhat similar to a switch, by means of which a dangerous variation in current flow will operate electro magnets and open the circuit. Circuit breakers are made to operate both for over-and-under-load.

CLASS A AMPLIFIER. Amplifier whose grid bias and alternating grid voltages produce a plate current that flows at all times in a specific tube.

CLASS AB AMPLIFIER. Amplifier whose gris bias and alternating grid voltages produce a plate current that flows less than the full, but more than half the electrical cycle.

CLASS B AMPLIFIER. Amplifier in which the plate current in a specific tube flows for about one-half of each cycle with grid voltage applied but in which plate current is zero without grid voltage applied.

CLASS C AMPLIFIER. Amplifier in which plate current in each tube is zero when alternating grid voltage is not applied.

COEFFICIENT OF HEAT TRANSMISSION. The amount of heat (BTU) transmitted from air to air in one hour per square foot of the wall, floor, roof or ceiling for a difference in temperature of 1 F between the air on the inside and that on the outside of the wall, floor, roof or ceiling.

COEFFICIENT OF SOUND ABSORPTION. When sound energy strikes any substance, it is partly reflected, partly transmitted, and partly absorbed (converted into heat). The percentage of energy absorbed by a given object is the object's absorption coefficient.

COLLECTING LENS. In a three-lens condenser the lens nearest the light source.

COLOR ANALYZER, (1) A colorimeter. (2) An instrument used to determine the relative brightness of light of different wavelengths reflected or transmitted by a substance or emitted by a source.

COLOR BLINDNESS. Any of various types of abnormal vision which impair the ability of the abnormal eye to detect color differences and relationships which are apparent to persons having normal sight. In total color blindness, all colors appear as greys; the more usual partial color blindness (dichromatism) is marked by the inability to distinguish between certain pairs, for example: red and green.

COLOR BOX. A device holding gelatines of different colors and permitting one to be substituted for another or two or more to be used together.

COLOR FRAMES. Devices in which gelatine sheets, are mounted.

COLOR MATCH. Two samples of light or colored materials are said to be a visual color match if they produce identical color sensations when viewed under some stated condition. Two samples of light or colored materials are said to be a physical color match if they produce identical color sensations when viewed under all possible conditions.

COLOR PHOTOGRAPHY. Any process in which an attempt is made to reproduce the light-and-shade and color of a scene by photographic means.

COLOR SENSATION CURVES, EXCITATION CURVES Curves based upon the response of the normal human eye showing the relative excitations of the three elementary sensations, according to the Young-Helmholts theory of color vision.

COLOR WHEEL. A device capable of being rotated for holding gelatines and for permitting one to be substituted for another as required. May be motor-driven.

COMFORT AIR CONDITIONING. The process by which simultaneously the temperature, moisture content, movement and quality of the air in enclosed spaces intended for human occupancy may be maintained within required limits.

COMFORT LINE. The effective temperature at which the largest percentage of adults feel comfortable.

C

COMFORT ZONE. (Average). The range of effective temperatures over which the majority (50 per cent or more) of adults feel comfortable. Comfort Zone (Extreme): The range of effective temperatures over which one or more adults feel comfortable.

COMMUTATOR. That part of a dynamo that changes direction of currents, so that the current flowing in the outside circuit will remain d.c.

COMMUTATOR RIPPLE. Small alternations in the emf produced by a d.c. generator, due to the operation of the commutator. This ripple is the chief cause of arc hum.

CONCEALED RADIATOR. A heating device located within, adjacent to, or exterior to the room being heated but so covered or enclosed or concealed that the heat transfer surface of the device, which may be either a radiator or a convector, is not visible from the room. Such a device transfers its heat to the room largely by convection air currents.

CONCENTRIC ARCUATED SEATING ROWS. Seats placed in curved-rows, whose radii increase from row to row.

CONDENSER (1) (Optical) A lens or combination of lenses used to gather light from a source and to converge (condense) it, as upon the aperture of a projector, or into an intense spot of light for use in a theatre, etc. (2) Electrical) A device for storing electrical energy consisting of two electrical conductors separated by a non-conducting medium.

CONDUCTIVITY. The amount of heat (BTU) transmitted in one hour through one square foot of a homogenous material 1 in. thick (or 1 ft.) for a difference in temperature of 1 F between the two surfaces of the material.

CONDUCTOR. (Heat). A material capable of readily conducting heat. The opposite of an insulator or insulation.

CONDUCTOR (Electrical). Any substance which will transmit electric current.

CONDUIT. A metal or armored tubing in which electric wires are placed for their protection.

CONTINUOUS PROJECTOR. Any motion picture projector in which the film travels continuously through the film gate, and a steady image is obtained on the screen by moving some of the elements in the optical system as required to compensate for the motion of the film. Distinguished from:. Intermittent projector.

CONVECTION. The transmission of heat by the circulation of a liquid or a gas such as air. Convection may be natural or forced.

CONVECTOR. A heat transfer surface designed to transfer its heat to surrounding air largely or wholly by convection. Such a surface may or may not be enclosed or concealed when concealed and enclosed the resulting device is sometimes referred to as a concealed radiator.

CONVERGING LENS. The lens of a condenser combination which is farthest away from the light source.

COUPLING. Interconnection of two circuits in a way that permits transfer of energy from one to the other.

COVELIGHTS. Fixtures, usually including reflectors or reflector trough, mounted in lighting covers.

COVERAGE POWER. The ability of a lens or optical system to form a satisfactory image of given size. "Covering power" is commonly expressed as the diameter of the maximum circle in the image plane within which a uniformly bright image free from objectionable aberrations can be formed.

CRATER. Depression that forms in the positive electrode of a carbon arc.

CRINKLE. A defect of a processed motion picture film consisting of a wavy fluting extending along one edge of the film. Crinkle may result from a mechanical mal-adjustment of a processing machine which stretches one edge of the film while it is wet.

CUE, CUE MARK. On a motion picture film, a mark or series of marks which appears in the upper right hand corner of the screen during projection, shortly before the end of the roll, to warn the projectionist that the end of the roll is approaching.

CURL. A defect of a photographic film consisting of unflatness in a plane cutting across the width of the film. Curl may result from improper drying conditions, and the direction and amount of curl may vary with the humidity of the aid to which the film is exposed.

CURVATURE. A defect of motion picture film consisting of a lack of straightness of the film base measured along an edge of the film.

CUT. (1) In shooting a scene on a set, to terminate a take. (2) In assembling and editing the material which will be spliced together to make the finished negative roll from which release prints are made, to discard unwanted film and select which is to be used.

CYCLE. One complete set of the changes of a wave for other periodic phenomenon). as from crest to trough and back to crest again. May refer to waves of sound, or alternating current, or any other waves or vibrations. Always relative to a second of time; thus "60 cycles" means 60 cycles per second.

CYCLE LINE. A continuous opaque line running the length of a motion picture film between the pictures and the sound track or between the sound track and the perforations.

D

DAYLIGHT. Light consisting of a natural combination of sunlight and skylight. For standardization of spectral quality, measurements are made at noon. The color quality of daylight matches approximately that of a black body at 7000 degrees Kelvin.

DECIBEL. The number of decibels denoting the ratio of two amounts of power is ten times the logarithm to the base ten of this ratio. Thus, a decibel is one tenth of a bel. If P. and P. designate two amounts of power and n is the number of decibels denoting their ratio:

$$n = 10 \log_{10} (P./P.)$$

DEGREE-DAY. A unit, based upon temperature difference and time, used in specifying the nominal heating load in winter. For any one day there exists as many degree-days as there are degrees Fahrenheit difference in temperature between the mean temperature for the day and 65 F.

DEHUMIDIFY. To reduce, by any process, the density of water vapor within a given space.

DEPTH. In a non-steroscopic picture, an illusion of three dimension space which is sometimes created by a combination of favorable lighting and coloring of the set and favorable viewing conditions for the reproduction.

DEPTH OF FIELD. The range of object distances within which objects are in satisfactory sharp focus in a photograph.

DEVELOPING. Chemically treating an exposed photographic material to convert the latent image to a visible image.

DEW-POINT TEMPERATURE. The temperature corresponding the saturation (100 per cent relative humidity) for a given moisture content.

DIAPHRAGM. (1) (Acoustical) The disc of a loudspeaker, which is caused to vibrate by electrical impulses, thereby becoming a source of sound; also a disc in a microphone, which is caused to vibrate by impinging sound waves. (2) (Optical) A device such as a perforated plate or an iris which limits either the aperature of a lens, the field covered by the lens, or both, depending upon its location.

DIFFRACTION. Bending of waves around an obstacle.

DIFFUSION. (1) (Optical) The scattering of light rays so as to cause the light falling on a surface or passing through an aperture to scatter in all directions in contrast to the regular radiation of light from a point source. Diffusion may be introduced by reflection from a matte surface, by transmission through a frosted or opal glass, or by the use of an integrating bar. When diffusion is complete, a sharp image of the light-source can no longer be seen, and its place is taken by a uniform, extended source which emits light equally in all directions.

DIMMER. An electrical device for altering the intensity of lights connected to it. Usually a variable resistor, it may also be a variable reactor or an electronic control.

DIMMER BANK. A group of dimmers, mechanically or electrically connected for operation either singly or in groups.

DIRECT CURRENT (D.C.) A current constant in direction, though not necessarily in value. A direct current constant both in direction and value is called a continuous current. Direct Current, which, while continuous in direction, pulsates as to pressure.

DIRECT CURRENT CONVERTER. A machine for converting D. C. of one voltage to D. C. of a different voltage.

DIRECT-INDIRECT HEATING UNIT. A heating unit located in the room or space to be heated and partially enclosed, the enclosed portion being used to heat air which enters from outside the room.

DIRECT-RETURN SYSTEM. (Hot Water). A hot water system in which the water, after it has passed through a heating unit, is returned to the boiler along a direct path, so that the total distance traveled by the water is the shortest feasible, and so that there are considerable differences in the lengths of the several circuits composing the system.

DISSOLVE, LAP-DISSOLVE. In a motion picture film, a gradual transition from one scene to the following scene which is accomplished by overlapping the two scenes in such a way that the screen brightness remains substantially constant, the first scene disappearing as the second appears.

DISTORTION. (1) (Chromatic) Incorrect rendition of the various colors within a single scene relative to each other, as distinguished from incorrect over-all color balance. (2) (Electrical or Acoustical) A change in waveform caused by (a) the addition of components having frequencies not originally present, due to circuit elements having non-linear characteristics; (b) a change in the relative amplitudes of the various components of the wave; or (c) a change in the relative phase of the various components. Two or more of these forms of distortion may occur simultaneously. (3) (Optical) An aberration of lenses which causes them to image straight lines in the margin of the field of view as curves. If the curvature is convex toward the center of the field, the distortion is said to be "Pincushion shaped' ; if the curvature is concave toward the center of the field, the distortion is called "barrel shaped". When an image is projected by an optical system whose elements are not all perpendicular to the optical axis, the image on the screen may fail to be geometrically similar to the image on the film. This type of distortion is sometimes described as "keystone."

DOUSER. Manually or electrically operated shutter in the lamphouse or in the condenser cone by means of which the light may be intercepted before reaching the film.

DOWN-FEED SYSTEM (Steam). A steam heating system in which the supply mains are above the level of the heating units which they serve.

DOWNLIGHTS. Lamps equipped with reflectors and often with lenses, projecting light downward for general illumination or ornamental effect.

DRAFT HEAD (Side Outlet Enclosure). The height of a gravity convector between the bottom of the heating unit and the bottom of the air outlet opening. (Top outlet Enclosure): The height of a gravity convector between the bottom of the heating unit and the top of the enclosure.

DRIP. A pipe or a steam trap and a pipe, considered as a unit, which conducts condensation from the steam side of a piping system to the water or return side of the system.

DRY. (A) To separate or to remove liquid water or water vapor from matter. (B) To separate or to remove any readily condensible vapor from other matter.

DRY AIR. In psychrometric work, dry air is defined as air without water vapor. This state, though not obtained practically, is used as the basis of calculations.

DRY-BULB TEMPERATURE. The temperature indicated by a standardized thermometer after correction for radiation, etc.

DRY RETURN. A return pipe in a steam heating system which carries both water of condensation and air. The dry return is above the level of the water line in the boiler in a gravity system.

DUB, DUB IN. In the preparation of a complete sound track which will accompany the action of a scene to introduce during a process or recording any sound effect or speech which was not recorded along with the original action.

DYNAMIC HEAD OR PRESSURE. . Same as Total Pressure.

E

ECHO. A defect of auditorium acoustics, consisting of distinctly reflected sound reaching some part of the audience after the original sound has reached the audience directly.

EFFECT LIGHTING. Projection of scenic or ornamental patterns, still or moving, such as cloud effects, water effects, etc.

EFFECT MACHINES. Lamps for producing effect lighting or effect projection.

EFFECT PROJECTION. Projection of scenic or ornamental pictures or patterns, still or moving, often used to provide a decorative frame for the motion picture screen at the start of a feature.

EFFECTIVE TEMPERATURE. An arbitrary index which combines into a single value the effect of temperature, humidity, and movement of air on the degree of warmth or cold felt by the human body. The numerical value is that of the temperature of still, saturated air which would induce an identical sensation of warmth.

EFFICIENCY (of a source of light). The ratio of the luminous flux to the total power input. In an electric lamp it is expressed in lumens per watt.

ELECTRO MOTIVE FORCE. That force which creates and maintains an electric current in, or on, through a conductor. It is commonly termed voltage. It is measured in volts. It is abbreviated E. M. F.

ELECTRON. Unit of negative electricity, and smallest particle of matter.

ELECTRON EMISSION. Rate at which electrons are emitted from the cathode in a vacuum tube.

ELECTRON TUBE, Generally, same as VACUUM TUBE THERMIONIC. May also refer to PHOTOELECTRIC CELL.

EMULSION, EMULSION LAYER. (1) Broadly, any light sensitive photographic material consisting of a gelatine emulsion containing silver halide together with the base and any other layers or ingredients which may be required to produce a film having desirable mechanical and photographic properties. (2) In discussions of the anatomy of a photographic film, the emulsion layer is any coating which contains light sensitive silver halide grains, as distinguished from the backing base, substratum, or filter layers.

EMULSION SIDE. That side of a single coated motion picture film on which the emulsion has been coated.

EQUIVALENT FOCUS. A term applicable to compound lenses consisting of two or more individual elements, as in the case of a projection lens. It means that the combination will possess the same power of reduction or magnification possessed by a single, simple lens having the same focal length as the equivalent focus of the combination. For example; A projection lens of 4.5 equivalent focus will, working under the same conditions, project the same size picture that a single lens of 4.5 inch focus.

ESTIMATED MAXIMUM LOAD. The load stated in BTU per hour or equivalent direct radiation that has been estimated to be the greatest or maximum load that the boiler will be called upon to carry.

EXCITER LAMP. Light source used in reproducing sound from film.

EXIT COURT. In theatre architecture, a space which is open to the sky add used for egress from the auditorium.

EXIT PASSAGE. In theatre architecture, a totally enclosed space which is used for egress from the auditorium.

EXTENDED SURFACE HEATING UNIT. A heating unit having a relatively large amount of extended surface which may be integral with the core containing the heating medium or assembled over such a core, making good thermal contact by pressure or by being soldered to the core or by both pressure and soldering. An extended surface heating unit is usually placed within an enclosure and therefore functions as a convector.

F

"F" SYSTEM. System of marking lens diaphragm stops in terms of the focal length. Thus, an F:6.3 stop has a diameter equal to 1/6.3 of the lens focal length.

FADE. (1) In a motion picture film, a gradual transmission at the start or end of a scene during which the scene becomes progressively darker until the action disappears. A "fade-out" is the gradual changing of a scene to black, a "fade-in" is the reverse change.

FADER. In a motion picture sound projection system, a device by which the volume of the reproduced sound is controlled.

FAST. (1) Having a high photographic speed. The term may be applied to a photographic process as a whole, or it may refer to any element in such a process, such as the optical system, the emulsion, or a developer.

FILAMENT. Heated wire from which electrons are emitted in a vacuum tube.

FILAMENT RESISTANCE. Rheostat controlling current through the filament of a vacuum tube.

FILM, MOTION PICTURE FILM. A thin, flexible ribbon of transparent cellulose material having perforations along one or both edges and bearing either a succession of images or a sensitive layer capable of producing photographic images.

FILM GATE. A moveable part of a motion picture camera, printer or projector, which holds the film in proper position against the aperture plate.

FILTER. (1) In mechanics, any system of springs, weights, or the like, used to suppress an undesirable vibration or motion. For example, a filter may be required in a motion picture projector to prevent undesirable vibrations caused by gear or sprocket teeth from being transmitted to the film traveling through the sound gate. (2) In electronics, a combination of resistance, reactance, or impedance used to suppress or control noise of some particular frequency which may interfere with good recording or reproduction.

FILTER, BAND-PASS. A filter designed to pass currents of frequencies within a continuous band limited by an upper and a lower critical or cut-off frequency and substantially reduce the amplitude of currents of all frequencies outside of that hand.

FILTER, HIGH-PASS. A filter designed to pass currents of all frequencies above a critical or cut-off frequency and substantially reduce the amplitude of currents of all frequencies below this critical frequency.

FILTER LOW-PASS. A filter designed to pass currents of all frequencies below a critical or cut-off frequency and substantially reduce the amplitude of currents of all frequencies below this critical frequency.

FLAME ARC. A flame arc is one in which the entire arc stream made luminescent by the addition of flame materials, is used as a light source.

FLARE. A defect of optical systems, scattered light resulting from reflections at optical surfaces, the walls of the camera, or imperfections in the optical parts, reaches the image plane and produces an overall fog or flare spot which damages the photographic quality of the resulting record.

FLAT. An image is said to be "flat" if its contrast is too low. Flatness is a defect which does not necessarily affect the entire density scale of a reproduction to the same degree. Thus a picture may be "flat" in the highlight areas, or "flat" in the shadow regions, or both.

FLICKER. Unsteadiness in the apparent intensity of a motion picture image as projected on a theatre screen. Because of "persistance of vision" it is not necessary for the succession of projected images to be uniformly bright and uninterrupted in order to get the appearance of a steady image. It is sufficient to have the succession of images uniformally spaced and to make any periods of darkness sufficiently small to be bridged by the "persistance of vision" of the human eye.

FLOODLIGHT. A reflector lamp designed to illuminate a limited area with light evenly distributed.

FLUORESCENT. Glowing with visible light when illuminated by ultra-violet.

FLUORESCENT LAMP. An electric discharge lamp in which the radiant energy from the electric discharge is transferred by suitable materials (phosphors) into wavelengths giving higher luminosity.

FLUORESCENT LIGHT STANDARD. A lamp consisting of a reflector and a number of fluorescent tubes, mounted on a pedestal stand.

f/NUMBER. A symbol used to express the relative aperture of a lens. For example, a lens having a relative aperture of 4.5 would be marked: f/4.5. See Aperture.

FOCAL LENGTH. The distance measured along the optical axis from the image of a point source at infinity to the nodal point on the same side of the lens. When a lens is unsymmetrical, the focal length on one side of the lens is not necessarily the same as the focal length on the other side.

FOCAL LENGTH, EQUIVALENT. Calculated focal, length of a combination of lenses or of a thick lens. Equal the focal length of such a simple thin lens as would give an image (of a distant object) the same size as the combination or thick lens gives.

FOCAL PLANE. The plane perpendicular to the optical axis of the lens at the focus.

FOCAL POINT. Point at which a lens forms the sharpest image of a very distant object.

FOCUS. (verb) To adjust the position of a lens so as to secure the sharpest possible image of an object.

FOG. Darkening of photographic film due to its exposure to undesirable light, or due to poor emulsion or to improper development.

FOOTCANDLE. The unit of illumination, when one foot is taken as the unit of a length. The illumination of a surface one square foot in area on which there is a uniformly distributed flux of one lumen; or the illumination produced at a surface all points of which are at a distance of one foot from a uniform point source of one candle.

FOOTLAMBERT. A unit of brightness equal to ... the uniform brightness of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot. . . . The average brightness of any surface, in footlamberts is, therefore, the product of the illumination in footcandles by the reflection factor of the surface.

FOOTLIGHTS. Fixtures including reflectors or reflector troughs, mounted along the front of the stage.

FOYER. In theatre architecture, a room between the auditorium and the lobby which serves as a gathering place for the members of the audience and facilitates their reaching the different aisles leading to the seating sections.

FRAME. A single picture on a motion picture film, representing the appearance of the scene at a particular instant. Thirty-five millimeter sound pictures are projected at the rate of twenty-four frames per second.

FRAME. (verb). So to adjust the projector framing device that the film photograph is in correct register over the aperture.

FRAME LINES. Broad dark lines printed on a motion picture film between the pictures. These lines prevent white light from reaching the screen in the event that the film in the projector should get "out-of-frame" because of an incorrect splice.

FRAME LINE NOISE. Noise in reproduction, due to the displacement of the film to the right in the projection machine, so that the beam of the light for the sound track shines through part of the picture area as well, and cuts the frame lines. This noise is a type of MOTORBOATING.

FRAMING DEVICE. An attachment on the projector which allows the operator to FRAME the picture properly.

FREQUENCY. Number of complete reversals or cycles per second.

FRINGE; COLOR FRINGE. A defect in color pictures resulting from imperfect registration of the component images. A fringe may be caused by parallax (as with cameras making two or three simultaneous records through different lenses), by error in printing some image in the correct position relative to the other images (because of shrinkage of a film base or maladjustment of the printer), or by movement of the object which has taken place between the making of the several color aspect records ("time parallax" in a color process employing successive frame photography).

FULL WAVE RECTIFIER. A two-element rectifier in which one element functions during one-half the cycle and the other for the next half cycle.

FUMES. Particles of solid matter resulting from such chemical processes as combustion, explosion, and distillation ranging from 0.1 to 1.0 micron in size.

FUNDAMENTAL FREQUENCY. The lowest component frequency of a periodic wave or quantity. See Basic Frequency, Sub-harmonic.

FURNACE. That part of a boiler or warm air heating plant in which combustion takes place. Also a complete heating unit for transferring heat from fuel being burned to the air supplied to a heating system.

FUZZY. (1) Of sound track on visual inspection: lack of sharpness. (2) Of reproduced sound: characterized by distortion particularly of high frequencies. The distortion may have been introduced in recording, processing or reproduction.

G

GAGE PRESSURE. Pressure measured from atmospheric pressure as a base. Gage pressure may be indicated by a monometer which has one leg connected to the pressure source and the other exposed to atmospheric pressure.

GAIN. Gain of energy in an apparatus is ratio of output to input energy.

GAIN CONTROL. Device for varying the gain of an amplifier.

GELATINE. A transparent membrane made in many colors and used with spot lights or flood lights to give light of the color desired.

GELATINE FILTER. A light filter consisting of a gelatine sheet in which the light-absorbing pigment or dye is incorporated. When maximum durability is required, gelatine filters may be connected between sheets of optically flat glass. Distinguished from: Light filters made from colored glass.

GENEVA MOVEMENT. Intermittent movement (produced by a cam-and-star-wheel) used in most projection machines.

GRAIN. The ultimate, discrete particles of silver or dye which form a photographic image.

GRAININESS. (1) The non-uniformity of a photographic image which results from the irregular clumping of the individual silver or dye particles which form the image. (2) The sensation or impression of non-uniformity in a photographic deposit, produced upon the consciousness of the observer when such a deposit is viewed.

GRANDEUR FILM. A system of motion picture photography using a film 70 millimeters wide. Frames were of normal height but considerably wider than standard.

GRID. In a vacuum tube, the frame of wire gauze between the filament and plate. Small changes in the electric potential of the grid circuit produce far greater changes in the electron flow from filament to plate.

GRID BIAS. Negative voltage applied to the grid of a vacuum tube.

GRID CONDENSER. Condenser connected in the grid circuit of a vacuum tube.

GRID LEAK. Very high, non-inductive resistance, usually connected across a condenser in the grid circuit of a three-electrode vacuum tube, to stabilize the action of the condenser (in making the tube more efficient) by permitting excess charge to leak off.

GROUND NOISE. Undesirable noise appearing in reproduced sound, due to film grain, amplifier noises, etc.

GROUND WIRE. In projection a wire connecting a projector frame with the earth.

H

HALATION. A defect of photographic films and plates. Light forming an image on the film is scattered by passing through the emulsion or by reflection at the emulsion or base surfaces. This scattered light causes a local fog which is especially noticeable around images of light sources or sharply defined highlight areas.

HALF-WAVE RECTIFIER. Device using one-half of each cycle to change alternating into pulsating current.

HARD. Of a vacuum tube, thoroughly evacuated.

HARMONIC. A component of a periodic wave or quantity having a frequency that is an integral multiple of the fundamental frequency.

HEAD-END. The end of a motion picture film which is intended to be projected first, also the corresponding end of any positive or negative, picture or sound records which may be required for making a release print.

HEATER. Element supplying heat to an indirectly-heated cathode in a vacuum tube.

HEATING MEDIUM. A substance such as water, steam, air or furnace gas used to convey heat from the boiler furnace or other source of heat or energy to the heating unit from which the heat is dissipated.

HEATING SURFACE. The exterior surface of a heating unit. Extended heating surface (or extended surface): Heating surface consisting of fins, pins or ribs which receive heat by conduction from the prime surface. Prime Surface: Heating surface having the heating medium on one side and air (or extended surface) on the other.

HIGH-INTENSITY CARBON ARC. A high-intensity carbon arc as used for projection is one in which, in addition to the light from the incandescent crater surface, there is a significant amount of light originating in the gaseous region immediately in front of the carbons as the result of the combination of a high-current-density and an atmosphere rich in flame materials.

HOOK-UP. Diagram of an electrical circuit; or the construction of such a circuit.

HORN, EXPONENTIAL. Type of loudspeaker horn in which the cross-section area increases exponentially with the axial distance from the diaphragm, so that cross-section areas, taken at equal intervals along the axis, have a constant ratio each to the next.

HORSE-POWER. One horse-power (H.P.) equals 33,000 foot-pounds of work per minute. It is the theoretical amount of work one strong draft horse is supposed to perform if a block and tackle be attached to a weight of 33,000 pounds and the tackle be of such proportion that the horse can, by exerting his full strength, just raise the 33,000 pounds one foot while walking outward pulling on the rope for a period of one minute. Under these conditions one horsepower has been exerted during that minute. That is the theory of one thing. One horse power-hour is the amount of work exerted by one horse during one hour, or by 60 horses during one minute, or by 3,600 horses during one second. In electrics 746 watts is supposed to represent the raising of 33,000 pounds one foot and in one minute, or, in other words, one horse power.

HOT WATER HEATING SYSTEM. A heating system in which water is used as the medium by which heat is carried through pipes from the boiler to the heating units.

HUMID HEAT. Ratio of increase of enthalpy per pound of dry air to rise of temperature under conditions of constant pressure and constant humidity ratio.

HUMIDIFY. To add water vapor to the atmosphere; to add water vapor or moisture to any material.

HUMIDISTAT. A regulatory device, actuated by changes in humidity, used for the automatic control of relative humidity.

HUMIDITY. Water vapor when mixed with dry air or other diluent gases. Absolute humidity is the weight of water vapor per unit volume of moist air, pounds per cubic foot. It can be calculated by dividing the humidity ratio, weight of water vapor per pound of dry air, by the volume of the mixture per pound of dry air. Relative, humidity is the ratio of the partial pressure of the water vapor in the air to the saturation pressure of the pure water corresponding to the actual temperature.

I

IMAGE, REAL IMAGE. In optics, an image which actually exists and could be thrown on a screen at the position where it appears to be.

IMPEDANCE. (1) Effective opposition of a circuit to current, due to the resistance and reactance of the circuit. Equals voltage divided by current. In a d-c circuit, impedance equals resistance. (2) Similarly, a load or opposition to the transmission of mechanical or sound energy.

INCANDESCENT LAMP. Lamp in which illumination results from the passage of electric current through a metal or carbon filament.

INCH OF WATER. The pressure due to a column of liquid water one inch high at a temperature of 60 F.

INDEX OF REFRACTION. The ratio of the speed of light in a vacuum to the speed of light in a given medium. Since, in general, the index of refraction is a function of wavelength, it is commonly measured with monochromatic light and a statement of the index of refraction of a material should include a specification of the wavelength, or frequency) of the light to which the value applies.

INFRA-RED. Light of a wavelength longer than the eye can perceive.

INSULATION. (Heat) A material having a relatively high heat-resistance per unit of thickness.

INTENSITY (SOUND). SOUND ENERGY FLUX DENSITY, FLUX DENSITY: The sound intensity of a sound field in a specified direction at a point is the sound energy transmitted per unit of time in the specified direction through a unit area normal to this direction at the point. The unit is the erg per second per square centimeter. But sound indensity may also be expressed in watts per square centimeter.

INTERFERENCE. Meeting of waves in such a manner as to reinforce or to lessen or cancel one another's effects.

INTERFERENCE COLORS. Colors resulting from the destruction of light of certain wavelengths and the augmentation of light of others in a composite beam by interference. Colors of thin films and polarization colors of double refracting crystals in a polariscope are examples of interference colors. Also called Newton's Rings, Interference Fringes.

INTERMITTENT MOVEMENT. The mechanism by means of which the intermittent sprocket is operated.

INTERMITTENT PROJECTOR. Any motion picture projector in which the optical parts are motionless and a succession of pictures is thrown on the screen by moving the film, one frame at a time, while the shutter is closed. Distinguished from: Continuous Projector.

INTERMITTENT SPROCKET. The sprocket of a projector by means of which the film is given its intermittent movement at the aperture.

K

KILOWATT. One thousand watts, which equal 1.34 horsepower.

KILOWATT HOUR. The use of one kilowatt of electric energy for one hour.

KNIFE SWITCH. A switch having a movable blade or blades, usually of copper, which are hinged at one end and make or break contact with parallel spring contact clips at the other. The switch blade takes the place of the conductor between its contact points.

L

LAMBERT. A unit of brightness equal to . . . the uniform brightness of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per centimeter.

LAWS OF THERMODYNAMICS. The Law of Conservation of Energy states that energy, in any of its forms, can neither be created nor destroyed. As a corollary to this, the First Law of Thermodynamics states that in any power cycle or refrigeration cycle the net heat absorbed by the working substance is exactly equal to the net work done. The Second Law of Thermodynamics states that a power cycle which absorbs heat at a single temperature and converts it wholly into work, as required by the First Law, is impossible; hence it is absolutely necessary to reject heat at some lower temperature if any work is to be done. The Second Law further prescribes the least possible quantity of heat that must be so rejected depending on the two temperatures involved.

LEADER. A short length of film attached to the leading title of a subject, or to the beginning of a reel of film, in order to protect it and to allow of threading into the take-up without using the film title for the purpose.

LENS. (a) A transparent medium, usually glass, having one or more curved surfaces, for the purpose of changing, the direction of rays of light, giving them a direction largely determined by the curvature of the lens surface or surfaces. (b) A combination of single lenses mounted together so as to act as a single (compound) lens.

LENS BARREL. Metal tube in which a lens is mounted.

LIGHT BRIDGE. A steel structure from which borderlights, spots, etc., may be suspended, and on which a man can stand to control the lights.

LIGHT FILTER. A transparent light absorbing sheet, commonly consisting of colored glass or dyed gelatine, which is placed in an optical system to control the spectral quality or intensity of the light passing a given plane. Also called Color filter, Color screen, Ray screen. Distinguished from: Optical grid, Polarizing Screen, Sky filter.

LIGHT TOWERS. Frameworks or pedestals, usually, mounted on roller casters, carrying spotlights or floodlights.

LIGHT TRAP. (1) In architecture, an arrangement of walls and doors designed to exclude undesired light from a theatre auditorium, dark room, or other space which must be kept dark. (2) On a film magazine, a narrow, crooked passage, frequently lined with black velvet which permits the passage of film but not of light.

LIGHT VALVE. In sound recording, an electric device used to modulate a beam of light.

LOAD. The amount of electric power being drawn from the generators or mains.

LOBBY. The space between the first and second sets of doors of a theatre. See Outside lobby.

LOOP. An endless band of film (especially negative) made by splicing the two ends of a length of film together to permit its running continuously through a processing machine, printer, or projector without being fed on and off the machine from reels.

LOUDSPEAKER. Device which, receiving an amplified varying electric current, transforms the current variations into mechanical vibrations, thus setting up sound waves.

LOW INTENSITY CARBON ARC. The low intensity carbon arc is one in which the principal light source is incandescent solid carbon at or near its sublimation temperature.

LUMEN. The unit of luminous flux. It is equal to the flux through a solid unit angle (steradian) from a uniform point source of one candle, or to the flux on a unit surface all point of which are at unit distance from a uniform point source of one candle.

M

MAGAZINE. Camera or projector camera compartment (necessarily light-tight in a camera) holding the roll of unexposed film; also, the compartment holding the roll of exposed film.

MAGAZINE VALVE OR MAGAZINE VALVE FIRE-TRAP. Narrow opening, formed by two rollers, through which film passes in or out of projector magazines. The opening is so tight that no air can pass; hence the valve prevents flames from entering the magazine in case of fire.

MAGNETIC FIELD. Region of magnetic influence surroundings a magnetic pole, and traversed by magnetic "lines of force," so that a magnetic needle (if free to move) will take up a definite position along a line of force.

MAT-SURFACE GLASS. Glass whose surface has been altered by etching, sand-blasting, grinding, etc., to increase the diffusion of light.

MEZZANINE. On a motion picture theatre, an intermediate floor level between the main auditorium level and the first balcony.

MICROPHONE. Device for converting sound waves into variation in an electric current.

MIRROR BALL. A revolving fixture studded with small mirrors designed to reflect a multitude of small, moving spots of light.

MISFRAME. In a film a wrongly made splice through which a part of one photograph is eliminated. In projection the showing of a portion of two pictures on the screen at the same time.

MIXER. (1) In recording, the apparatus which terminates the circuits from all microphones, and contains controls so that the recording apparatus will receive proper intensities from the various microphones. (2) The operator of mixer apparatus.

MODULATE. In sound recording, to control the frequency or amplitude of a sound record in accordance with some definite scheme or record. Also in photography, to regulate light intensity as in printing, masking, etc.

MOTOR GENERATOR. In projection, a machine consisting usually of an A.C. motor directly connected to a D.C. generator for the purpose of generating D.C. with power applied by A.C. The resultant D.C. may be of higher, lower, or the same voltage as the A.C. supply, but for projection work it is, in modern and efficient machines supplied at arc voltage by a generator wound for constant current.

MOVING PERIOD. That portion of the picture cycle (in recording or in projection) during which the film at the aperture is in motion, expressed in degrees of revolution of the controlling flywheel (360° = 1 cycle).

N

NEGATIVE FILM. Any of those types of motion picture film which are designed and used primarily for the making of the original camera records of a negative-positive process. Such films are usually characterized by high speed and special spectral sensitivity.

NITRATE FILM. A motion picture film whose base is composed principally of cellulose nitrate.

NOISE. In sound recording, any extraneous sounds which may be heard by the microphone or introduced into the reproduction by imperfections of the recording or reproducing systems. Noise is a defect of sound reproducing systems and must be held at a low level if good reprocution is to be obtained.

NON-TRACK SIDE. In describing the location or orientation of pictures or defects on a sound motion picture film, that edge of the film which is opposite to the edge carrying the sound track.

NUMBER OF TEETH IN MESH. The number of teeth in mesh with the film (commonly referred to as "teeth in contact") is the number of teeth in the arc of contact of the film with the drum of the sprocket when the pulling face of one tooth is at the end of the arc.

O

OBJECTIVE. In a system of lenses, the lens nearest the object being viewed or photographed. In projection, the lens nearest the screen.

OBSERVATION PORT. The opening in the front projection room wall through which the projectionist views the screen.

OHM. The unit of resistance.

OHM'S LAW. The law that, considering a uniform flow of current is given circuit, the amperage is equal to the F.M.F., in volts, divided by the resistance in Ohms. The law is expressed in simple formulas.

OIL WELL. (a) An oil-tight receptacle in which the intermittent movement of a modern projector is placed so that it may work in an oil bath. (b) A cavity under a dynamo or motor bearing which contains oil for lubrication of the bearing.

OLIVETTE. A floodlight mounted on a pedestal stand. Double or triple olivettes consist of two or three floodlights mounted at different heights on the same pedestal stand.

ONE-PIPE SYSTEM (Hot Water). A hot water system in which the cooled water from the heating units is returned to the supply main. Consequently, the heating units farthest from the boiler are supplied with cooler water than those near the boiler in the same circuit.

ONE-PIPE SYSTEM (Steam). A steam heating system consisting of a main circuit in which the steam and condensate flow in the same pipe, usually in opposite directions. Ordinarily to each heating unit there is but one connection which must serve as both the supply and the return, although separate supply and return connections may be used.

OPAL GLASS. Highly diffusing glass having a nearly white, milky or gray appearance. The diffusing properties are an inherent, integral characteristic of the glass.

OPALESCENT GLASS. Opal glass having the properties of selectively transmitting and diffusing light, with a resultant fire appearance when used with concentrated incandescent sources. Sometimes referred to as fire opal.

OPEN CIRCUIT. A circuit which is not complete as to electrical connection. A circuit which has been broken, as by the opening of a switch.

OPTICAL SYSTEM. Any apparatus which transmits and alters rays of light.

OPTICAL TRAIN. In a projector, the various lenses it employs referred to as a whole.

ORCHESTRA FLOOR. The lowest seating area of a theatre.

OUTLET. A point in ceiling or wall out of which wires are led to make connection with lamps, motors, etc.

OUTLET BOX. An iron box, usually circular in form, located at an outlet to protect the splices and to serve as an anchorage for the circuit conduit.

OUT OF FOCUS. When the image is not sharp on the screen.

OUTPUT. The electrical energy delivered by a dynamo.

OUTSIDE LOBBY. The partially enclosed space in front of the first set of entrance doors. (Sometimes called "Vestibule".)

OUTSIDE WIRING. Wiring attached to the surface - not concealed.

OVERLOAD. A load greater than a machine is designed to carry.

OVERLOAD CAPACITY. The amount of overload an electrical device or a machine may carry, either permanently or for a stated period, without sustaining permanent injury.

P

PAN (with a camera). During the course of photographing a scene, to swing the camera around in such a way as to follow the action. Derived from; Panorama.

PANELLBOARD. Name applied to a small distributing switchboard, usually located in the wall of a room, auditorium or hallway, and controlling several circuits, or perhaps all the circuits on a single floor.

PANEL BOARD FUSES. Fuses controlling the circuits controlled by a panel board.

PENTODE. A thermionic tube containing a plate, a cathode and three additional electrodes.

PERFORATIONS. Regularly spaced and accurately shaped holes which are punched throughout the length of a motion picture film. These holes engage the teeth of various sprockets and pins by which the film is advanced and positioned as it travels through cameras, processing machines, and projectors.

PERSISTENCE OF VISION. A property of the eye which consists of an inability to detect the flickering of a light provided that its frequency exceeds a certain critical value. Thus, modern 35 Millimeter sound pictures are projected at a rate of 24 frames per second using a shutter which closes 48 times each second. (Once in the middle of each frame and once at the end.) Under normal viewing conditions, such pictures appear to be continuous.

PHASE. Degree to which a whole wave or vibration is displaced from a standard position.

PHASE, SINGLE. Generated and distributed a.c. involving only two wires and a single voltage wave.

PHOSPHORESCENCE. The emission of light by a substance which has previously absorbed radiant energy of a shorter wavelength. Thus, phosphorescence is delayed fluorescence. The term is derived from white phosphorous a substance which glows in the dark when exposed to air because of slow oxidation (burning).

PHOTOELECTRIC CELL, PHOTOELECTRIC EFFECT. Certain chemical elements emit electrons when exposed to light of certain wavelengths (colors), the number of electrons emitted depending on the intensity of the light. This effect facilitates transformation of the light into electricity, since electrons in motion constitute an electric current In a photoelectric cell, a piece of such an element is used as a cathode; the freed electrons flow to a plate (the anode) and a current flows in the external circuit. These cells do not contain air, which would chemically attack the sensitive element. Abbreviation, Pec.

PHOTOELECTRIC-CELL AMPLIFIER. Amplifier which first amplifies the small current from a photoelectric cell.

PHOTOELECTRONS. Electrons liberated by light when the photoelectric effect takes place.

PHOTOMETER. Any device for measuring light intensity.

PITCH. (1) That property of sound which is determined by the frequency of the sound waves. (2) Distance from the center of one perforation on a film to the next; or from one thread of a screw to the next; or from one curve of a spiral to the next.

PLANO CONVEX. A lens which is flat on one side and convex on the other.

PLATE. The anode of a vacuum tube or photoelectric cell.

POLAROID. Trade name for various types of homogeneous, anisotropic sheet material used for polarizing light. Such sheets may consist of an oriented colloidal dispersion of crystals or herapathite.

POLISHED PLATE GLASS. Glass whose surface irregularities have been removed by grinding and polishing so that the surfaces are approximately plane and parallel.

POLYPHASE. Includes TWO-PHASE, THREE-PHASE, and higher numbers of phases in a.c. circuits.

PORT. In projection, an opening in the front wall of the projection room.

POSITIVE FILM. Any of the types of motion picture film which are designed and used primarily for the making of master positives, or black-and-white release prints. Such films are usually characterized by long latitude, fine grain, and good image color.

POTENTIOMETER. Device controlling or measuring the electromotive force (voltage) across one or more circuits, by placing each of these in parallel with a variable part of a fixed resistance.

POWER. The rate of performing work; usually expressed in units of horsepower, BTU per hour, or watts.

POWER AMPLIFICATION (of an amplifier). The ratio of the alternating current power produced in the output circuit to the alternating current power supplied to the input circuit.

POWER AMPLIFIER. An amplifier capable of handling large amount of electrical energy.

POWER TUBE. A high-output vacuum tube.

PRIMARY COLORS. In any color process or theory, those colors which are used to synthesize a complete color reproduction or which are taken to be the fundamental color sensations from which all others are formed by combination.

PROJECTION ANGLE. The angle between the optical axis of a projector and the horizontal.

PROJECTION BACKGROUND. A background for a scene photographed in a studio which consists of a picture projected on a suitable diffusely reflecting or a transmitting screen. Especially, a background obtained by rear projection of a motion picture with a projector whose shutter is in sync with the camera which is photographing the background and action.

PROJECTION DISTANCE. The distance from the front of the projector lens mount to the screen, measured along the optical axis.

PROJECTION PERIOD LIGHTING. Any lighting of the auditorium that may be necessary or desirable during the projection of the motion picture.

PROJECTIONIST. A person skilled in the art of projecting motion pictures and operating sound-on-film reproducing equipment.

PROJECTOR DESIGNATION. In a projecting room, looking toward the screen, the projector on the left shall be known as Projector No. 1, and the projector on the right as Projector No. 2.

PROSCENIUM LIGHTS. Striplights or border lights concealed behind the proscenium.

PROSCENIUM OPENING. The opening in the auditorium front wall through which the screen is viewed.

PUPIL. By analogy with the human eye, a small circular, opening in the diaphragm of an optical system which may or may not be variable in diameter or location.

PUSH-PULL AMPLIFIER. An amplifying apparatus, employing two amplifier tubes, designed to obtain greater amplication with less distortion.

R

RADIANT ENERGY. Energy traveling in the form of electromagnetic waves. Measured in units such as ergs joules, calories or kilowatt hours.

RADIANT FLUX. The time rate of flow of radiant energy. Expressed preferably in watts, or in ergs per second.

RADIANT HEATING. (Panel Heating). A method of heating involving the installation of the heating units (pipe coils) within the wall, floor or ceiling of the room so that the heating process takes place mainly by radiation from the wall, floor or ceiling surfaces to the objects in the room. Panel heating also refers to a system transmitting heat by both radiation and convection to both air and surrounding surfaces, while radiant heating refers to a system dependent on radiation alone in which case only the heat radiated from the panel is effective for heating purpose.

RADIATION. The transmission of heat through space by wave motion.

RADIATOR. A heating unit exposed to view within the room or space to be heated. A radiator transfers heat by radiation to objects within visible range and by conduction to the surrounding air which in turn is circulated by natural convection; a so-called radiator is also a convector but the single term radiator has been established by long usage. .

RADIO FREQUENCY. Any frequency above about 10,000 cycles per second.

RATTLE, LOUDSPEAKER. Is sometimes heard in reproduction due to the vibration of an element within the loudspeaker unit, usually occurring when the sound volume is large.

RAW STOCK. A finished motion picture film as supplied by the manufacturer prior to hypersensitizing or exposure in a camera.

REAR PROJECTION. The projection of a picture onto a translucent screen from the side opposite to that from which the picture is viewed.

REAR SCREEN SPACE. The space on the side of the screen away from the audience.

REFLECTION FACTOR (of a Surface). The ratio of the luminous flux emitted by a secondary source (e.g., a reflector) to the luminous flux incident upon the secondary source from the primary source. Reflection factor is stated in terms of per cent.

REFRACTION. That property of a medium which determines the velocity with which light can travel in it. If a ray of light is incident obliquely upon a surface separating a transparent medium from air, the index of refraction of the medium can be determined by measuring the angles of incidence and refraction and taking the ratio of the size of the larger of these angles to the size of the smaller. The index of refraction of a medium depends upon the wavelength of the light used for its measurement. The variation of index of refraction with wavelength is called the "disperson" of the material.

REFRIGERANT. A substance which produces a refrigerating effect by its absorption of heat while expanding or vaporizing.

RELEASE PRINT. In a motion picture processing laboratory, any of numerous duplicate prints of a subject which are made for general theatre distribution.

RE-REFLECTED SCREEN LIGHT. Light reflected from the screen and re-reflected from any other surface in the auditorium.

RETURN MAINS. The pipes which return the heating medium from the heating units to the source of heat supply.

REVERBERATION. Persistence of sound in an enclosed space, due to reflection from the walls.

REVERBERATION, TIME OF. Time required for a reverberating sound to die away to one-millonth of the intensity of the original sound.

REVERSED-RETURN SYSTEM. (Hot Water). A hot water heating system in which the water from several heating units is returned along paths arranged so that all circuits composing the system or coming a major subdivision of the system are practically of equal length.

ROUNDELS. Curved glass facings made in many colors which fit on footlight, striplight and other fixtures to provide colored illumination from ordinary incandescent bulbs.

S

SAFETY FILM. A photographic film whose base is fire resistant or slow burning. At the present time, the terms "safety film" and "acetate film" are synonomous.

SATURATED AIR. A mixture of dry air and saturated water vapor, all at the same dry-bulb temperature. It may also be considered as air containing the maximum possible amount of water vapor at a given temperature without becoming supersaturated.

SCRATCH FILTER. A choke coil and condenser used to filter out very high frequency sounds or ground noises.

SCREEN GRID TUBE. A modified type of vacuum tube with high amplification. A fourth electrode - the screen grid - is used to reduce the electrostatic effect between grid and plate.

SENSATION LEVEL. Refers to loudness of sound, in decibels, compared to the intensity of sound of the same pitch which would be just barely audible in quiet surroundings.

SENSIBLE HEAT. Heat which manifests itself by temperature change.

SHADOW BOX. A recess containing lamps and reflectors or reflector trough, over which lettered or illustrated material can be placed and illuminated from within.

SHOWER. A revolving fixture, designed to project a multitude of small, moving spots of light.

SHUTTER. Moving (usually rotating) device, which intercepts the beam of light in a motion picture camera, printer, or projector, once during each picture cycle.

SIGNAL-TO-NOISE-RATIO. In sound reproduction, the ratio in decibels of the loudness of the signal (speech or music as the case may be) to that of the extraneous noise added to the signal during the processes of recording and reproducing.

SOFFIT. In theatre architecture, the ceiling under a balcony.

SOUND CONCENTRATION. A defect of auditorium acoustics which consist of the existence of an area within the auditorium where the sound reproduced by the speakers can be heard very much louder than in other parts of the room.

SOUND HEAD. Compartment on the projector which contains sound-reproducing systems and mechanism for guiding and driving film.

SOUND PICK-UP. Device or system for reproducing sound. In disc reproduction, an electromagnetic device which transforms the waves in the grooves of the disc into variation of electric current. In film reproduction an optical-electrical system contained in the sound head.

SOUND TRACK. A narrow band along a film (on the left side of the pictures), which carries the sound record.

SPECIFIC CONSUMPTION. In an electric lamp, its watt consumption per lumen.

SPECIFIC GRAVITY. The ratio of the weight of a body to the weight of an equal volume of water at some standard temperature, usually 39.2 F.

SPECIFIC HEAT. The ratio of heat absorbed per unit weight of substance to temperature rise. For gases, both specific heat at constant pressure, cp, and specific heat at constant volume, cv, are frequently given. In air conditioning, cp is usually used.

SPHERICAL ABERRATION. The failure of any image-forming optical element or system to unite into a single focus all the rays of light of the same wavelength that - emerging from a point object lying on the optical axis - are transmitted or reflected by that element or system.

SPLICE. Any type of cement or mechanical fastening by which two separate lengths of films are united end-to-end so as to function as a single piece of film when passing through a camera, film processing machine, or projector.

SPOTLIGHT. A lamp, usually incorporating both reflector and lens, designed to protect a sharply defined circle or oval of light.

SPROCKET. On a camera, projector, or other motion picture machine, a film carrying spool having teeth which engage the perforations of the film, causing the film and sprocket to move at the same surface speed.

STANDEE PARTITION, STANDEE RAIL. In a motion picture auditorium, a partition (or rail) separating a last row of seats from a cross-over.

STANDEE SPACE. A space in a theatre in which patrons are permitted by law to stand and view the performance.

STEAM HEATING SYSTEM. A heating system in which heat is transferred from the boiler or other source of steam to the heating units by means of steam at, above, or below atmospheric pressure.

STEAM TRAP. A device for allowing the passage of condensate and preventing the passage of steam, or for allowing the passage of air as well as condensate.

STEPPED PLATFORM SEATING. In the architecture of an auditorium, stepped platforms upon which seats are placed. The amount of rise from one platform to another is determined by the "sight clearance factor".

STEREOPHONIC SOUND. A system of sound reproduction by which the spacial distribution of the original action can be simulated.

STRIPLIGHTS. Fixtures, including reflectors or reflector trough, usually mounted vertically in the wings to help illuminate the stage or curtain.

SUB HARMONIC. A sub-harmonic is a component of a complex wave having a frequency which is an integral submultiple of the basic frequency. Note: The term subharmonic is generally applied in the case of a driven system whose vibration has frequency components of lower frequency than the driving frequency.

SUPPLY MAIN (Steam). The pipes through which the steam flows from the boiler or source of supply to the run-outs and risers leading to the heating units.

SWITCHBOARD. (Stage). A device mounting a number of switches and dimmers, for control of stage and house lighting.

SYNC, SYNCHRONIZATION. Two picture records or a picture record and a sound record are said to be "in sync" when they are so placed relative to each other on a release print as to be projected in correct temporal or special relationship. When this condition is not met, the two records are said to be "out of sync".

SYNCHRONOUS MOTOR. Type of motor whose speed is governed by the standard frequency of the alternating current supplied to it.

T

TAIL END, T.E. The end of a motion picture film which is intended to be projected last. See head End.

TAKE-UP. Mechanism by means of which a film is wound upon a reel after passing the aperture (in photography, printing or projection); also, to wind it thus.

TAKE-UP REEL. Reel on which film is taken-up.

TENSION. As applied to projection (a) the pressure exerted by the tension springs, either through the tension shoes or direct upon the film at the aperture. (b) The tension exerted by a spring upon two friction discs for the purpose of revolving the film reel in the lower magazine, providing slippage so that the reel, although driven by a power having steady speed, may revolve at differential speed, gradually slowing up as the film roll increases in size.

TENSION SHOES. Metal bars upon which the tension springs bear on the film and provide braking friction to stop film over aperture.

TENSION SPRINGS. The springs which provide braking action to stop the film over the aperture at the completion of the intermittent movement.

THERMOSTAT. An instrument which responds to changes in temperature and which directly or indirectly controls the source of heat supply.

THREADING-UP. Operation of starting the film through the camera, printer, or projector, as the case may be.

THREE-COLOR PHOTOGRAPHY. Any photographic process by which a reproduction is made from three independent records which correspond to three different color aspects of the original scene. Commonly, these records will represent the blue, green, and red aspects of the scene and the positives made from them are either blue, green, and red (for an additive process) or yellow, magenta, and cyan (for a subtractive process).

THRESHOLD OF AUDIBILITY. The threshold of audibility at any specified frequency is the minimum value of the sound pressure of a sinusoidal wave of that frequency which produces a pitch sensation. This term is often used to denote minimum value of the sound pressure of any specified complex wave (such as speech or music) which gives the ear the sensation of sound. The point at which the pressure is measured must be specified in every case. The unit for expressing "threshold of audibility" is the dyne per square centimeter. Note: Unless otherwise specified, the ear is assumed to be in a silent place. The threshold of audibility may also be expressed in terms of the intensity level above a specified reference intensity.

TIME OF REVERBERATION. In acoustics, the length of time required for a sound to die down from its initial intensity to some much smaller intensity. The ratio of initial and final intensity may be expressed in decibels, and the time of reverberation in seconds.

TON OF REFRIGERATION. The removal of 12,000 BTU of heat per hour at a low temperature.

TON DAY OF REFRIGERATION. The removal of 288,000 BTU of heat at a low temperature.

TOTAL HEAT. This can usually be interpreted as increase of enthalpy at constant pressure. It is often regarded as synonymous with enthalpy.

TOTAL PRESSURE. In the theory of the flow of fluids, the sum of the static pressure and the velocity pressure at the point of measurement.

TRACK, SHOW THE. To remove the sound track mask, in projection, so as to permit an image of the track to appear on the screen beside the pictures.

TRACK SIDE. In describing the location or orientation of pictures or defects on a sound motion picture film, that edge of the film which carries the sound track.

TRAFFIC CONTROL (Physical or Suggestive). Any device (architectural lighting or decoration, signs, door controls, barriers, etc. (used to direct the movement of people in the public spaces of a theatre structure.

TRAILER. A short series of scenes with descriptive matter referring to a forthcoming motion picture production which is shown in theatres for advertising purposes. (2) A short length of opaque film attached to the end of a reel of film so that projection may proceed up to the end of the film proper without showing white light upon the screen.

TRANSFORMER. Apparatus used in an a.c. circuit to raise (STEP-UP) or lower (STEP-DOWN) the voltage. Consists (in its simplest form) of two coils of wire and a laminated iron core, all insulated from one another. Current in the primary coil sets up magnetic flux around the core; the variations in this flux, due to the variation in the primary current, set up a similarly alternating current in the secondary coil. In general, the voltage across each coil is proportional to the number of turns on the coil; the current in each coil is inversely proportional to the voltage.

TRANSITION LIGHTING. The graduation of illumination from outdoors to the inside of a theatre auditorium.

TRAVEL GHOST. A defect of motion picture projection systems. Through failure of the shutter mechanism to be correctly designed or adjusted, a moving ghost image or patch of light may appear on the screen or theatre wall in addition to the principal image on the screen.

TRAVELING ARC. An unsteady arc, particularly one in which the point of highest illumination in the crater moves about, usually due to faulty carbons.

TWO-PIPE SYSTEM. (Steam or Water). A heating system in which one pipe is used for the supply of the heating medium to the heating unit and another for the return of the heating medium to the source of heat supply. The essential feature of a two-pipe system is that each heating unit receives a direct supply of the heating medium which medium cannot have served a preceding heating unit.

U

ULTRA-VIOLET FILTER. A light filter which (A) absorbs the ultra-violet but transmits visible light, or (B) absorbs visible light while transmitting some region in the ultra-violet.

ULTRA-VIOLET. Light of a wavelength shorter than the eye can perceive. Causes fluorescence, and can be photographed.

UNIT. As applied to heating, ventilating and air conditioning equipment this word means factory-built and, assembled equipment with apparatus for accomplishing some specified function or combination or functions.

It is loosely applied to a great variety of equipment. Uusually the function is included in the name, and hence come terms like Unit Heater, Unit Ventilator, Humidifying Unit, and Air Conditioning Unit.

Units are said to be direct or room, when intended for location, or located in, the treated space; indirect or remote, when outside or adjacent to the treated space. They are ceiling units when suspended from above, and floor when supported from below. Other descriptive words include free delivery when the unit is not intended to be attached to ducts or similar resistance-producing devices, and pressure when for use with such ducts. Complete description requires the use of several of these qualifying, words or phases.

V

VACUUM HEATING SYSTEM. A two-pipe steam heating system equipped with the necessary accessory apparatus which will permit operating the system below atmospheric pressure when desired.

VAPOR HEATING SYSTEM. A steam heating system which operates under pressures at or near atmospheric and which returns the condensations to the boiler or, receiver by gravity. Vapor systems have thermostatic traps or other means of resistance on the return ends of the heating units for preventing steam from entering the return mains; they also have a pressure-equalizing and air-eliminating device at the end of the dry return. Direct Vent Vapor System; A vapor heating system with air valves which do not permit re-entry of air.

VARIABLE AREA SOUND TRACK. A sound track which consists essentially of an opaque line of variable width running the length of a motion picture film.

VARIABLE DENSITY SOUND TRACK. A sound track which is constant in width but variable in density along the length of the record.

VARIABLY-PITCHED AUDITORIUM FLOOR. A floor incline having a changing pitch for every row, or group of rows, of seats to obtain proper sight clearance.

VENTILATION. The process of supplying or removing air by natural or mechanical means, to or from any space. Such air may or may not have been conditioned. (See air conditioning.)

VOLATILIZATION. In projection, the transforming of carbon into vapor through heat.

VOLT. Unit of electrical pressure.

VOLTAGE AMPLIFICATION. The ratio of the alternating voltage produced at the output terminals of an amplifier to the alternating voltage impressed at the input terminals.

VOLTAGE DROP. The drop in voltage due to the resistance of the conductors. Voltage drop exists in every circuit. See "Copper Loss."

VOLT-AMMETER. An instrument for measuring current consumption in watts.

VOLTMETER. An instrument of high resistance for measuring electrical pressure.

W

WARM AIR HEATING SYSTEM. A warm air heating plant consists of a heating unit (fuel burning furnace) enclosed in a casing, from which the heated air is distributed to the various rooms of the building through ducts. If the motive head producing flow depends on the difference in weight between the heated air leaving the casing and the cooler air entering the bottom of the casing, it is termed a gravity system. A booster fan may, however, be used in conjunction with a gravity-designed system. If a fan is used to produce circulation and the system is designed especially for fan circulation, it is termed a fan furnace system or a central fan furnace system. A fan furnace system may include air washers and filters.

WATT. Unit of power. Power employed to do ten million ergs of work in one second. Power produced by a one-ampere current falling through a potential difference of one volt. 746 watts equals one horsepower.

WATT HOUR. The energy consumed when one watt of electrical energy has been used for one hour.

WATT-HOUR METER. A meter used for measuring electrical consumption in watt hours.

WAVE-LENGTH. Distance between crests along a wave.

WET-BULB TEMPERATURE. Thermodynamic wet-bulb temperature is the temperature at which liquid or solid water, by evaporating into air, can bring the air to saturation, adiabatically at the same temperature. Wet-bulb temperature (without qualification) is the temperature indicated by a wet-bulb psychrometer constructed and used according to specifications.

WINDOW GLASS. Glass . . . having a characteristic waviness of surface which is visible when viewed at an acute angle or in reflected light.

WIPE. In a motion picture film, a transition from one scene to another which is accomplished by the motion across the screen of a more or less distant line of demarcation, separating the first scene from the second. Also, called Wipe-off.

WORK LIGHT. A reflector type lamp mounted on a pedestal stand, used to provide illumination for cleaning, etc.

WORKING APERTURE. In projection, that portion of the aperture of a lens which is actually in use in the sense that it is contributing to the improvement of the finished screen result.

WOW-WOWS. A type of pulsation of intensity in reproduced sound, due fundamentally to change of speed of the sound track during either recording or reproduction. While this change of speed produces a change of pitch, the latter, when the fluctuation is rapid is generally not perceptible but the phenomena of interference of sound waves in the theatre cause this change of pitch to produce a rapid periodic change of intesnity. Wow-wows correspond to a variation in speed of say, up to six cycles per second; FLUTTER, to a variation of about six to thirty cycles; GARGLE, 30 to 200 cycles; and WHISKERS, over 200 cycles.

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